



Interstate® Brick

a division of PABCO Building Products, LLC

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DIV. OIL GAS & MINING

Notice of Intention to Commence Large Mining Operations

Snow White Mine

T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County

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FOR DIVISION USE ONLY

File #: M / /

Date Received:

DOGM Lead:

Permit Fee \$ Ck #

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 West North Temple Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
Telephone: (801) 538-5291 Fax: (801) 359-3940

NOTICE OF INTENTION TO COMMENCE LARGE MINING OPERATIONS

The informational requirements in this form are based on provisions of the Mined Land Reclamation Act, Title 40-8, Utah Code Annotated 1953, General Rules and Rules of Practice and Procedures.

This form applies only to mining operations which disturb or will disturb more than five acres at any given time.

"MINING OPERATIONS" means those activities conducted on the surface of the land for the exploration for, development of, or extraction of a mineral deposit, including, but not limited to, surface mining and the surface effects of underground and in situ mining, on-site transportation, concentrating, milling, evaporation, and other primary processing.

"Mining operation" does not include: the extraction of sand, gravel, and rock aggregate; the extraction of oil and gas as defined in Chapter 6, Title 40; the extraction of geothermal steam; smelting or refining operations; off-site operations and transportation; or reconnaissance activities which will not cause significant surface resource disturbance or involve the use of mechanized earth-moving equipment such as bulldozers or backhoes.

PLEASE NOTE: *This form is to be used as a guideline in assembling the information necessary to satisfy the Large Mining Operations Notice of Intention requirements. **You will need extra space to provide a majority of the information requested.** Please provide the information on additional sheets and include cross-referenced page numbers as necessary. The Permittee / Operator may submit this information on an alternate form; however, the same or similar format must be used.*

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I. **Rule R647-4-104 - Operator(s), Surface and Mineral Owners**

The Permittee / Operator must provide the name, address and telephone number of the individual or company who will be responsible for the proposed operation. If a company is to be listed as the Permittee / Operator, then the name of the corporate officers need to be provided.

1. **Mine Name:** Snow White Mine
2. **Name of Permittee/ Operator/ Applicant:** Pabco Building Products, LLC dba Interstate Brick
Company () Corporation (X) Partnership () Individual ()
A corporation must be registered with the State of Utah, Division of Corporations. Are you currently registered to do business in the State of Utah? **Yes**
Business License # 5286582-0161
Registered Agent (as identified on your business license): CT Corporation Service
Address: 50 W Broadway Ste 800, Salt Lake City, UT 84101
Phone: 801-364-5101 Fax: 801-359-0388
3. **Permanent Address:** 9780 South, 5200 West, West Jordan, UT 84088
Phone: 801-280-5200 Fax: 801-280-5220
4. **Company Representative** (or designated operator):
Name: John Hewitt
Title: Assistant Plant Mgr.
Address: 9780 South, 5200 West, West Jordan UT 84088
Phone: 801-280-5230 Fax: 801-280-5321
5. **Location of Operation:**
County(ies) Utah
S 1/2 of SW 1/4, Section: 20 Township: 7S Range: 1W
E 1/2 of NW 1/4 of NW 1/4, Section: 29 Township: 7S Range: 1W
W 1/2 of NE 1/4, NW 1/4, Section: 29 Township: 7S Range: 1W

The names of the surface and mineral owners for any areas which are to be impacted by mining must be provided to the Division. This list should include all private, state and federal ownership and the owners of lands immediately adjacent to the project areas.

6. **Ownership of the land surface** (circle all that apply):
Private (Fee), Public Domain (BLM), National Forest (USFS), State of Utah (SITLA) or other:
Name: Pabco Building Products, LLC. Db a Interstate Brick, (part in section 29)
Address: 9780 South, 5200 West, West Jordan, UT 84088
Name: State of Utah (SITLA) (part in section 20)
Address: 675 East, 500 South Suite 500 Salt Lake City, UT 84102
Name: Interpace Brick Company (includes existing access road to section 29)
Address: 736 W. Harrisville Rd. Ogden, UT 84404

7. **Owner(s) of record of the minerals to be mined** (circle all that apply): Private (Fee), Public Domain (BLM), National Forest (USFS), State of Utah (SITLA) or other:

Name: (Fee) Pabco Building Products, LLC. Db a Interstate Brick

Address: 9780 South, 5200 West, West Jordan, UT 84088, part of mine in section 29

Name: State of Utah, SITLA, part of mine in section 20, mineral lease ML46846, lots 5 & 12. And ML 46839 lots 3 & 6.

Address: 675 East, 500 South Suite 500 Salt Lake City, UT 84102

8. **BLM Lease or Project File Number(s) and/or USFS Assigned Project Number(s):** none

Utah State Lease Number(s): ML46846 (lots 5&12) & ML46839 (lots 3 & 6)

Name of Lessee(s): Pabco Building Products LLC. Db a Interstate Brick

9. **Adjacent land owners:**

Name: State of Utah (SITLA)

Address: 675 East, 500 South Suite 500 Salt Lake City, UT 84102

Name: Interpace Brick Company

Address: 736 W. Harrisville Rd. Ogden, UT 84404

Have the land, mineral and adjacent land owners been notified in writing?

Yes x No _____

If no, why not? _____

11. **Does the Permittee / Operator have legal right to enter and conduct mining operations on the land covered by this notice?** Yes X No _____.

II. Rule R647-4-105 - Maps, Drawings & Photographs

105.1 - Base Map

A complete and correct topographic base map (or maps) with appropriate contour intervals must be submitted with this notice showing all of the items on the following checklist. The scale should be approximately 1 inch = 2,000 feet (preferably a USGS 7.5 minute series or equivalent topographic map where available). The map(s) must show the location of lands to be affected in sufficient detail to allow measurement of the proposed area of surface disturbance.

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Base Map Checklist

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Please check off each section to verify these features are included on the map(s) or explain why it is not applicable. Please add the map identification name or number which shows these features.

Check		Map ID
<u> √ </u>	(a) Property boundaries of surface ownership of all lands which are to be affected by the mining operations; 105.1.(a).1 SITLA lease ML 46839 105.1.(a).2 SITLA lease ML 46846 105.1.(a).3 Interpace Brick fee land 105.1.(a).4 Interstate Brick fee land	
<u> √ </u>	(b) Perennial, intermittent, or ephemeral streams springs and other bodies of water roads buildings landing strips electrical transmission lines water wells oil and gas pipelines existing wells or boreholes location of wells for groundwater R647.4.109.1 or other existing surface or subsurface facilities within 500 feet of the proposed mining operations;	105.1.(b).1 none 105.1.(c) none none none none none see item: none
<u> √ </u>	(c) Proposed route of access to the mining operations from nearest publicly maintained highway (Map scale appropriate to show access); 105.1.(c) access road to Soilder's pass road (publicly maintained) & SR68	
<u> √ </u>	(d) Known areas which have been previously impacted by mining or exploration activities within the proposed land affected; 105.1.(d) area previously impacted by mining	
<u> √ </u>	(e) Areas proposed to be disturbed or reclaimed over the life of the project or other suitable time period. 105.1.(e) total area affected by this mine plan	

105.2 - Surface Facilities MapSurface Facilities Map Checklist

Surface facilities maps should be provided at a scale of not less than 1" = 500'.

Please check off each section to verify these features are included on the map(s) or explain why it is not applicable. Please add the map identification name or number which shows these features.

Check
√

Map ID

- (a) Proposed surface facilities, including but not limited to:
- buildings - **none present or used in mining**
 - stationary mining/processing equipment - **none present or used in mining.**
 - roads - **105.2.(a).1 existing temporary roads in existing mine area**
 - utilities - **none**
 - power lines - **none**
 - proposed drainage control structures - **none**
 - location of topsoil storage areas - **105.2.(a).2 typical temporary topsoil staging area before spreading over redistributed overburden at the end of a season's mining.**
 - **105.2.(a).3 existing growth medium pile from previous mining to be spread over redistributed overburden rock, approximately 2,698 CY.**
 - **105.2.(a).4 existing growth medium pile from previous mining to be spread over redistributed overburden rock, approximately 1,202 CY**
 - overburden/waste dumps - **105.2.(a).5. Existing Overburden rock piles (4) - 2.4 acres total, est. 31,852 CY to be graded and redistributed.**
 - tailings or processed waste facilities - **none**
 - disposal areas for overburden - **none**
 - solid and liquid wastes, - **none**
 - and wastewater discharge treatment and containment - facilities; - **none**
 - other: **105.2.(a).6 3 existing clay stockpile pads, approximately 2 acres.**
 - Existing walls from mining 102.2.(a).7**

√

- (b) A border clearly outlining the extent of the surface area proposed to be affected by mining operations, and the number of acres proposed to be affected;

Item 105.2.(b).1: total area affected (disturbed and reclaimed) by mining - 28 acres

Item 105.2.(b).2; areas of future mining-7.1 acres, consisting of 6.2 5.2 acres from the north area, and 4.4 1.9 acres from the southern area.

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Item 105.2.(b).3; existing area previously affected by mining - 20.9 acres √ (c) The location of known test borings, pits, or core holes. – **105.2.(c)****105.3 - Additional Maps**Reclamation Treatments Map Checklist

Please check off each section to verify these features are included on the map(s) or explain why it is not applicable. Please add the map identification name or number which shows these features.

Check

Map ID

 √ (a) Areas of the site to receive various reclamation treatments shaded, cross hatched or color coded to identify which reclamation treatments will be applied. Areas would include:

buildings – **no buildings exist or are used in mining.**
stationary mining/processing equipment – **none exist**
roads – **105.3.(a).1**
property access right-of-way road, also shown on the Basemap and Surface Facilities Map, to remain as is for Interpace Brick property access.
utilities – **no utilities used in this mining**
proposed drainage improvements or reconstruction – **none**
and sediment control structures – **none**
topsoil storage areas

105.3-2.(a).2 existing growth medium pile from previous mining to be spread over redistributed overburden rock, approximately 2,698 CY.
105.3-2.(a).3 existing growth medium pile from previous mining to be spread over redistributed overburden rock, approximately 1,202 CY

Future mining will consists of making temporary growth medium piles that would last about 4 weeks. At the end of the mining, these piles will be redistributed over redistributed rocky overburden and seeded during the next available October / November optimum seeding period. These temporary short lived will be place within the already disturbed area of 105.3(b).

tailings or processed waste facilities – **none**
disposal areas for overburden

Rock piles to be redistributed and/or graded to be less than 3H:1V:

105.3.(a).4 - Distributed rock on Interpace Brick Property (North of the Section 29 / 20 line).

Est. 12,939CY. The north edge of this pile will be pulled back to restore the ephemeral stream bed. The trench that runs along the currently exposed clay seam (item 103.3.(a).5) will be filled with the rock and matched up to the undisturbed portion of the mine face that runs along the part of the line shown on item 105.3.(a).6) north of the section 29/20 line, without causing any new disturbances. The two growth medium piles 105.3.(a).2 and 105.3.(a).3 will be used to cover the rock in this area. These plans have been agreed on with Interpace Brick.

105.3.(a).7 previously mined rock overburden pile:

Est. 10,560 CY. The north edge of this pile will be pulled back to restore the edge of the ephemeral streambed and sloping to less than 3H:1V. Material from the north edge will be deposited to the south to fill in the area previously mined of clay.

105.3.(a).8 previously mined rock overburden pile:

Est. 4,274 CY. The south edge of this pile will be graded to 3H:1V

105.3.(a).9 previously mined rock overburden pile:

Est. 26,394 CY. The south edge of this pile will be graded to 3H:1V.

solid and liquid wastes – **none**
ponds, and wastewater discharge, treatment and containment facilities. – **none**

Reclamation treatments may include ripping, regrading, replacing soil, fertilizing, mulching, broadcast seeding, drill seeding, and hydroseeding:

105.3.(a).10 - area where rock has been redistributed and growth medium /top soil deposited, prepared for seeding, 1 acre

 ✓

(b)

A border clearly outlining the extent of the area to be reclaimed after mining, the number of acres disturbed, and the number of acres proposed for reclamation:

- 105.3.(b) mine area that is currently bonded, will be reclaimed in this plan, total of 28 acres (16 acres on the northern Trust Lands area, 2 acres in the middle Trust Land's area, and 10 acres on the Southern Interstate Brick and Interpace Brick area.

 ✓

(c)

Areas disturbed by this operation which are included in a request for a variance from the reclamation standards:

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See section "(d)" below

- √ (d) Highwalls which are proposed to remain steeper than 45 degrees and slopes which are proposed to remain steeper than 3 horizontal : 1 vertical. _____

Note: Areas included in sections c & d will need to be referenced in the variance request section. Please shade or color code these areas on this map.

Additional maps and cross sections may be required in accordance with Rule R647-4-105.3. Design drawings and typical cross-sections for each tailings pond, sediment pond, or other major drainage control structures must also be included.

See map id. 105.3.(a) on Reclamation Treatments map: location of transects for cross-section drawings

Included in Appendix 2, Mine cross-section drawings & Reclamation Cost Estimate: Map

105.3.2 plan view of location of transects used for making cross-section drawings

105.3.3 cross-section of mine before mining

105.3.4 cross-section of mine at present

105.3.5 cross-section of mine at end of mining

105.3.6 cross-section of mine at reclamation

105.3.7 calculation of reclamation grading and seeding costs

Included in page 2 of Appendix 3, Reclamation Cost of a Typical Mining Campaign

III. Rule R647-4-106 - Operation Plan

106.1 - Mineral(s) to be mined: Clay for brick making

106.2 - Type of Operation Conducted:

Describe the typical methods and procedures to be used in mining operations, on-site processing and concurrent reclamation. Include equipment descriptions where appropriate.

Mining consists of removing overburden, excavating and stockpiling a layer of clay using a track-hoe and a small mine dump truck. Clay is stockpiled at the site for later haulage to Interstate Brick.

Concurrent Reclamation will be done by backfilling areas previously mined with new overburden and capping with the upper growth medium materials also removed to expose the clay.

Mining progress into the side of the hill. Benched slopes will be established as mining progresses into the hill. After mining permanently ends the benches will be graded.

See map, 106.2, Map showing a typical mining campaign, in Maps, Drawings and Photographs.

There is No on-site processing.

After the final mining operation is over all roads within interstate's mine area will be reclaimed along with the mine area. The main north / South road will remain open because this is Interpace Brick's access to their property.

106.3 - Estimated Acreage

Acreage listed here should match areas measured off the maps provided.

Areas of actual mining **-7.1 acres consisting of 5.2 acres from north area & 1.9 acres from the southern area..- See 105.2.(b).2 on Surface Facilities Map)**

Overburden/waste dumps: **2.4 acres – 5 existing piles – item 105.2.(a).3 on Surface Facilities Map. Future mining will not contribute to these piles.**

Ore and product stockpiles: **2.0 acres - see 105.2.(b).4, clay stockpile pad areas, on Surface Facilities Map**

Access/haul roads: **1.1 acre - see 105.3 (a) 1 on Reclamation Treatments map**

Associated on-site processing facilities: **n/a**

Tailings disposal: **n/a**

Other - Please describe: **- 20.9 acres: above acreages of 106.3 subtracted from the 28 acres of the entire plan (item 105.2.(b).1**

Total Acreage - 28 acres

106.4 - Nature of material including waste rock/overburden and estimated tonnage

Describe the typical annual amount of the ore and waste rock/overburden to be generated, in cubic yards. Where does the waste material originate? What is the nature of the overburden/wastes (general chemistry/mineralogy and description of geologic origin)? Will it be in the form of fines or coarse material? What are the typical particle size and size fractions of the waste rock?

Thickness of overburden: **variable, can be up to 30'** ft.

Thickness of mineral deposit: **5 – 15'** ft.

Estimated annual volume of overburden: _____ cu. yds.

Estimated annual volume of tailings/reject materials: **see overburden** cu. yds.

Estimated annual volume of ore mined: _____ cu. yds.

Overburden/waste description: _____

106.5 - Existing soil types, location of plant growth material

Specific information on existing soils to be disturbed by mining will be required. General soils information may not be sufficient. ***See soils analysis included in Appendix 1.***

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Provide specific descriptions of the existing soil resources found in the area. Soil types should be identified along with depth and extent, especially those to be directly impacted by mining. **See below & See soils analysis included in Appendix 1. .**

Soils - The plan shall include an Order 3 Soil Survey (or similar) and map. This information is needed to determine which soils are suitable for stockpiling for revegetation. This soil data may be available from the local Natural Resources Conservation Service office, or if on public lands, from the land management agency. The map needs to be of such scale that soil types can be accurately determined to the ground (see Attachment I). – **see appendix 1.**

Description of Soil types:

- (a) Each soil type to be disturbed needs to be field analyzed for the following:

Atepic shaly loams

Depth of soil material	<u>6</u> inches
Volume (for stockpiling)	<u>0</u> cu. yds.
Texture (field determination)	<u>shaly silty clay loam</u>
pH (field determination)	<u>8.5-9.0</u>
(cross reference with item 106.6)	

Amtoft Rock Outcrop:

Depth of soil material	<u>14</u> inches
Volume (for stockpiling)	<u>0</u> cu. yds.
Texture (field determination)	<u>very cobbly loam</u>
pH (field determination)	<u>7.9-9.0</u>
(cross reference with item 106.6)	

Checkett moist rock outcrop:

Depth of soil material	<u>10</u> inches
Volume (for stockpiling)	<u>0</u> cu. yds.
Texture (field determination)	<u>very gravelly clay</u>

loam

pH (field determination)	<u>8.0-8.6</u>
(cross reference with item 106.6)	

- (b) Where there are problem soil areas (as determined from the field examination) laboratory analysis may be necessary. Soil samples to be sent to the laboratory for analysis need to be about one quart in size, properly labeled, and in plastic bags. Each of the soil horizons on some sites may need to be sampled. Soil sample locations need to be shown on the soils map. Soil analysis for these samples should include: texture, pH, Ec (conductivity), CEC (Cation Exchange Capacity), SAR, % Organic Matter, Total N, Available Phosphorus (as P₂O₅), Potassium (as K₂O), and acid/base potential.

106.6 - Plan for protecting and redepositing existing soils

See Overlay of USAD Soil map in Maps Drawings & Photographs

Amtoft Rock Outcrop complex, AcE, Soil to be impacted by Northern part of mine.
See Map 105.2, Overlay of US Dept of Agriculture Soil data in part 2.

Thickness of soil material to be salvaged and stockpiled: 14 inches
Area from which soil material can be salvaged: (show on map) 5.2 acres
Volume of soil to be stockpiled: 10,053 cu. yds.
(cross reference with item 106.5 (a))

Atepic shaly loam, AmE, Soil to be impacted by Southern part of mine.
See Map 105.2, Overlay of US Dept of Agriculture Soil data in part 2.

Thickness of soil material to be salvaged and stockpiled: 6 inches
Area from which soil material can be salvaged: (show on map) 1.9 acres
Volume of soil to be stockpiled: 1,530 cu. yds.
(cross reference with item 106.5 (a))

Describe how topsoil or subsoil material will be removed, stockpiled and protected.

When topsoil or the upper growth medium material is removed it will be temporary stockpiled for approximately 4 weeks. It will be redeposited after the subsoil rock overburden that is removed is redeposited in the rear area of the mine where the clay layer has already been excavated. Seeding will take place the next October or November during the optimum seeding time. See map 106.2, Map Showing A Typical Mining Campaign

106.7 - Existing vegetative communities to establish revegetation success

Vegetation - The Permittee / Operator is required to return the land to a useful condition and reestablish at least 70 percent of the premining vegetation ground cover.

Provide the Division with a description of the plant communities growing onsite and the percent vegetation cover for each plant community located on the site. Describe the methodology used to obtain these values.

The percent ground cover is determined by sampling the vegetation type(s) on the areas to be mined (see Attachment I for suggested sampling methods).

- (a) Vegetation Survey - The following information needs to be completed based upon the vegetation survey:

Sampling method used - Ocular estimation of cover along 3 randomly placed transects

Number of plots or transects (10 minimum) 10 plots on each of 3 transects-

total 30 plots.

Ground Cover

Percent

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Vegetation (perennial grass, forb and shrub cover)	<u>25%</u>
Litter	<u>33%</u>
Rock/rock fragments	<u>24%</u>
Bare ground	<u>18%</u>
Moss	<u>0%</u>
	100%
Revegetation Requirement (70 percent of above vegetation figure)	<u>17.5%</u>

Indicate the vegetation community(ies) found at the site.

List the predominant perennial species of vegetation growing in each vegetation community type.

<u>Artemisia tridentate var. wyomingensis</u>	<u>Wyoming big sagebrush-23%</u>
<u>Agropyron spicatum</u>	<u>Bluebunch wheatgrass – 2%</u>
<u>Artemisia Tridentata</u>	<u>Black sagebrush – 1%</u>

- (b) Photographs - The Permittee / Operator may submit photographs (prints) of the site to show existing vegetation conditions. These photographs should show the general appearance and condition of the area to be affected and may be utilized for comparison upon reclamation of the site. Photographs should be clearly marked as to the location, orientation and the date they were taken.

Photographs are available in the Baseline Vegetation Assessment in Appendix 1.

106.8 - Depth to groundwater, overburden material & geologic setting

Describe the approximate depth to groundwater in the vicinity of the operation based on the completion of any monitoring or water wells in the area. Please show the location of these wells on the base map.

Depth to groundwater 175 ft – See attached letter, Appendix 3.

Provide a narrative description of the geology of the area and/or a geologic cross section.

Most of the geologic deposits in the immediate area of the mine are derived from recent deposits from the ancient lake Bonneville. There are also pockets of surficial limestone deposits from the Mississippian period of the Paleozoic era in the area. The main soil series of the area is the Donnardo- Borvant-Juab series, which formed on alluvial fans.

106.9 - Location and size of ore and waste stockpiles, tailings and treatment ponds, and discharges

Describe the location and size of any proposed waste/overburden dumps, stockpiles, tailings facilities and water storage or treatment ponds. **There are some existing**

piles which will be resloped less than 3:1 to blend into the existing terrain. In the South end of the mine the rock overburden will be pushed back in the pit left after the clay is extracted. The overburden in the north end of the mine will be redistributed and blended with the natural terrain over previously mined areas. The mine plan calls for resloping to less than 3:1 and revegetating the affected areas.

Describe how overburden material will be removed and stockpiled.

Overburden material will be stockpiled and resloped to less than 3:1 and revegetated.

Describe how tailings, waste rock, rejected materials, etc. will be disposed of.

No material handled at this mine requires disposal.

Describe the acreage and capacity of waste dumps, tailings ponds and water storage ponds to be constructed. All impoundments must include the necessary hydrologic calculations to determine if they are adequately sized to handle storm events.

Describe any proposed effluent discharge points (UPDES) and show their location on the surface facilities map. Give the proposed discharge rate and expected water quality. Attach chemical analyses of such discharge if available.

There are no effluent discharge points and none will be created. No effluents are generated by this mining operation.

IV. R647-4-107 - Operation Practices

During operations, the Permittee / Operator shall conform to the practices listed under this section of the Minerals Rules unless the Division grants a variance in writing.

Describe measures taken to minimize hazards to public safety during mining operations regarding:

the closing or guarding of shafts and tunnels to prevent unauthorized or accidental entry in accordance with MSHA regulations; ***No shafts or tunnels currently exist or will be made.***

the disposal of trash, scrap metal, wood and extraneous debris; (107.1.12). The only trash generated by actual mining personal garbage (lunch bags, etc.) from people working and grease tubes, filters, etc. associated with maintenance of the track hoe, rock truck, and or dozer. This type of equipment will be removed from the premises on a daily basis by whoever is working at the site. Other forms of trash and debris are typical of quarries located in "urban-interface zone" and can include abandoned cars, occasional illegal dumping of rubbish, and shot gun shells associated with the mine. Interstate Brick works with the Sheriff's department on investigating cars before they are hauled away to be scrapped. A sign with the company name, contact phone number, designation as a mine area, and stating that no shooting is to take place will be posted at the entrance to the mine area. Interstate Brick will take reasonable measures to keep the property clear of trash.

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the plugging or capping of drill, core or other exploratory holes; ***Existing bore holes at this mine are approximately 4" in diameter and have been measured to be about 10'. The mine plan calls for mining these areas out.***

the posting of appropriate warning signs in locations of public access to operations; (107.1.14) A sign with the company name, contact phone number, designation as a mine area, and stating that no shooting is to take place will be posted at the entrance to the mine area.

the construction of berms, fences or barriers above highwalls or other excavations. (107.1.15) earth berms to warn and provide a barrier against a vehicle from rolling over the edge will be placed at the top of high walls.

If any of these safety measures are unnecessary, please explain why.

Describe measures taken to avoid or minimize environmental damages to natural drainage channels which will be affected by this mining operation.

Natural drainages shall always be avoided when at all possible for mine access as well as an area for any other mining activities (i.e. stockpiling areas, waste rock, etc.). Sediment and erosion control are described below to minimize sediment movement off site or into any drainages.

Describe measures taken to control and minimize sediment and erosion on areas affected by this mining operation. Describe measures being taken to prevent sediment from leaving the disturbed area.

In the winter months water borne sediment from the disturbed mine area collects in the mine area and does not leave the premises. Where applicable Best Management Practices (BMPs) shall be employed to prevent sediment movement off site. Water that collects in the wet months stays on the site and dries in the summer. No evidence of sediment leaving the mine area has been observed.

Identify any potentially deleterious materials that may be stored on site (including fuel, oil, processing chemicals, etc.) and describe how they will be handled and stored.

Describe the measures taken to salvage and store soils to be used in reclamation.

Soils redeposited during reclamation will have come from the overburden removal that takes place during the mining.

Describe how stockpiled topsoil will be protected from erosion and further impact.

Top soil removed during a mining season will be redistributed temporarily stored for approximately a month, then redistributed over the spread overburden at the end of the 1 month mining campaign, then seeded the following October or November during the optimum time for seeding.

Please describe any reclamation to be done during active mining operations prior to final closure. Reference these areas on a map.

Topsoil and Overburden removed during mining will be redistributed in prior mined areas as described in the paragraph above.

V. Rule R647-108 - Hole Plugging Requirements

All drill holes which will not eventually be consumed by mining must be plugged according to the methods listed in this section. Describe the location of any aquifers encountered by drilling and the method to be used to plug such water containing holes. Describe the method to be used for plugging holes not containing water.

No water has been encountered in previous drilling or seen in any of approximately 6" diameter holes. This plan calls for all the existing drill holes to be consumed by mining. If drill holes are not consumed by mining they will be filled and plugged in accordance with R647-4-108.1.11.

VI. Rule R647-109 - Impact Statement

109.1 - Surface and groundwater systems

Describe impacts to surface or groundwater which could be caused by this mining operation. Describe how these impacts will be monitored and mitigated. The appropriate groundwater and stormwater control permits need to be obtained from the Division of Water Quality. Please reference any such permits.

No impacts to surface or groundwater resources are anticipated during this mining operation. An ephemeral stream lies between the north and south mine areas. Continued efforts shall be made to keep all sediment from moving off site into the drainage with the implementation of erosion control Best Management Practices. No permits are currently in place for this site.

109.2 - Wildlife habitat and endangered species

Describe the impacts on wildlife habitat associated with this operation. Describe any impacts to big game species found in the area. Describe any impacts to riparian areas. Describe any impacts this operation will have on waterfowl (fly-over, temporary resident or permanent resident). List any threatened or endangered wildlife species found in the area. Describe impacts to threatened or endangered species and their habitats. Describe measures to be taken to minimize or mitigate any impacts to wildlife or endangered species.

No listed threatened or endangered species occur in the area. No riparian areas exist at the mine site, although ephemeral drainages shall be protected as described in section R647-4-107. Very little activity occurs at this mine on a regular basis, and when activity does occur, either mining or loading clay from the stockpile onto haul trucks, it is only over an approximate 4 week time period and during daylight hours.

109.3 - Existing soil and plant resources

Describe impacts to the existing soil and plant resources in the area to be affected by mining operations. Describe impacts to riparian or wetland areas which will be affected by mining. Describe impacts to threatened or endangered plant species. Describe measures to be taken to minimize or mitigate any impacts to soil and plant resources.

No riparian or wetland areas are located at the mine and no threatened or endangered plant species are in the area. The mine plan is designed to keep

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disturbed area and impacts minimal by back-filling overburden material in previously mined areas.

109.4 - Slope stability, erosion control, air quality, public health & safety

Describe the impacts this mining operation will have on slope stability, erosion, air quality, public health and safety. Include descriptions of highwall and slope configurations and their stability. Air quality permits from the Utah Division of Air Quality may be required for mining operations. Please reference any such permits. Describe measures to be taken to minimize or mitigate impacts to slope stability, erosion, air quality, or public health and safety.

No known air quality permits are required. Slope stability will be maintained by benching as required. See cross-section drawings in Appendix 2. Measures will be taken if required to control fugitive dust from mining.

VII. Rule R647-4-110 - RECLAMATION PLAN

110.1 - Current land use and postmining land use

Current or premining land use(s) [other than mining]: Wildlife Habitat & ***Livestock grazing***

List future post-mine land-use(s) proposed: Wildlife Habitat & ***Livestock grazing***

(Develop the reclamation plan to meet proposed post-mine land use.)

110.2 - Reclamation of roads, highwalls, slopes, leach pads, dumps, etc.

Describe how the following features will be reclaimed: roads, highwalls, slopes, impoundments, drainages and natural drainage patterns, pits, ponds, dumps, shafts, adits, 8 drill holes and leach pads. Describe the configuration of these features after final reclamation. Describe the rinsing and neutralization of leach pads associated with final decommissioning.

Roads will be ripped and seeded that are within the areas shown in the Reclamation Treatments Map. This mining operation does not include a pit (see cross-section drawings in Appendix 2), no ponds are associated with this mining operation, See Reclamation treatments map and Surface Facilities maps concerning overburden piles, no shafts exist as this mine and none will be made during this mining operation. No leach pads are present at this site and none are being requested in this permit. No leach pads exist at this site or are associated with this type of mining operation.

Describe how roads will be reclaimed. Road reclamation may include: regrading cut and fill sections, ripping the road surface with a dozer, topsoil replacement, construction of water bars, construction of traffic control berms or ditches, and reseeding.

Roads to be closed will be ripped to a depth of 18 inches to loosen the soil. Seeds will be broadcasted at a rate of 12.7 lbs/acre (see section 110.5 and the areas will be treated with biosolids.)

Describe how highwalls will be reclaimed. Highwall reclamation may include: drilling and blasting, backfilling, regrading, topsoil replacement, and reseeding.

See cross-section drawings in Appendix 2.

Describe how slopes will be reclaimed. Slope reclamation may include: regrading to a 3 horizontal : 1 vertical (3h:1v) configuration, topsoil replacement, contour ripping, pitting, and reseeding.

Slopes greater than 3H:1V will be dozed and graded using a track hoe and dozer as described in Appendix 2.

Describe how impoundments, pits and ponds will be reclaimed. Include the final elevations and final disposition of the drainage in and around the impoundment. If the impoundment, pit, or pond is intended to be left as part of the post-mining land use, then an agreement with the land managing agency/owner is required. Structures to remain must be left in a stable condition.

No impoundments, pits or ponds occur at this site.

Include the final size of the impoundment, pit, pond in acre-feet of storage and the capacity of the spillway to safely pass storm events.

No impoundment, pit, pond, or spillway are part of this mine plan.

Impoundments, pits, and ponds, which are not approved as part of the post mining land use shall be reclaimed, free draining, and the natural drainage patterns restored.

Describe how drainages will be reclaimed. Drainage reclamation would include: the reestablishment of a natural drainage pattern which fits in with the upstream and downstream cross-section of existing drainage in the vicinity of the disturbance; the reestablishment of a stable channel in the reclaimed reach of channel, using the necessary armoring to prevent excessive erosion and downstream sedimentation.

The reclamation of this mine reestablishes the natural drainage pattern of this area. See cross-section drawings in Appendix 2.

Include cross-sections and profiles of reestablished channels to demonstrate compatibility with existing drainage characteristics.

See page 13 and 14 of Appendix 2 which restores the ephemeral stream (105.

Describe how waste dumps will be reclaimed. Waste dump reclamation may include regrading to a 3h:1v configuration, topsoil replacement, mulch or biosolids applications, contour ripping or pitting, and reseeding. Characterization of the physical and chemical nature of the waste dump materials should be provided.

Existing rock piles will be graded to less than 3H:1V, covered with a growth medium material, and seeded. See Appendix 2.

Describe how shafts and adits will be reclaimed. Reclamation of shafts may include: backfilling, installation of a metal grate, installation of a reinforced concrete cap, topsoil replacement and reseeding. Reclamation of adits may include: backfilling, installation of a block wall, installation of a metal grate, topsoil replacement and reseeding.

No shafts are present at this site nor are not part of this mining operation.

Describe how drill holes will be reclaimed. Drill hole reclamation must be consistent with the rules for plugging drill holes (R647-4-108). Reclamation of plugged drill holes may include topsoil replacement and reseeding.

Describe how tailings areas will be reclaimed. Tailings reclamation may include: dewatering, neutralization, placement of cap materials, placement of subsoil materials, topsoil replacement and reseeding. Characterization of the physical and chemical makeup of the tailings material should be provided.

No tailings are generated at this site.

Describe how leach pads will be reclaimed. Reclamation of leached materials may include: neutralization or leached materials, rinsing of leached materials, dewatering leached materials, regrading slopes of leached materials to 3h:1v, extending pad liners, placement of capping materials, placement of subsoil materials, mulch or biosolids application, topsoil replacement and reseeding. Characterization of the physical and chemical makeup of the leached materials should be provided. Post closure monitoring and collection of drain down fluids should also be addressed.

No leach pads are present at this site.

NOTE: The Minerals Rules require overall highwall angles of no more than 45° at final reclamation unless a variance is granted. All dump or fill slopes should be left at an angle of 3h:1v or less. Any slopes steeper than 3h:1v must be reclaimed using state-of-the-art surface stabilization technology. Pit benches exceeding 35 feet in width should be topsoiled, or covered with fines, and revegetated.

Describe the final disposition of any stockpiled materials on site at the time of final reclamation.

Overburden piles will be resloped to less than 3:1 and revegetated.

110.3 - Surface facilities to be left

Describe any surface facilities which are proposed to remain on-site after reclamation (buildings, utilities, roads, drainage structures, impoundments, etc.). Describe their post-mine application. *Justification for not reclaiming these facilities must be included in the variance request section.*

None of the items described above will be left except for some of the roads in the area.

110.4 - Treatment, location and disposition of deleterious materials

Describe how these materials will be neutralized, removed, or disposed of on site. Describe how buildings, foundations, trash and other waste materials will be disposed of.

No deleterious non-natural materials are generated or result from this mining and no processing or treatment to the materials handled occurs at the mine site. There are no buildings or foundations associated with this mining that have to be disposed of.

110.5 - Revegetation planting program and topsoil redistribution

Describe the revegetation tasks to be performed in detail. For example, will ripping, mulching, fertilizing, seeding and scarifying of these areas be performed and if so, how will this be accomplished? Correlate this information with the Reclamation Treatments Map.

a) Soil Material Replacement

In order to reestablish the required ground cover, one to two feet (depending on underlying material) of suitable soil material usually has to be redistributed on the areas to be reseeded. If the stockpiled soil isn't sufficient for this, soil borrow areas will need to be located.

Describe the volume of soils and approximate depth of soil cover to be used in reclamation. Describe the source of these soils and provide an agronomic analysis of the soils. If soils will not be used describe the alternative material or amendments to be applied in lieu of soils. Describe the methods used to transport and place soils.

b) Seed Bed Preparation

Describe how the seedbed will be prepared and equipment to be used. The Division recommends ripping or disking to a minimum of 12 inches and leaving the seed bed surface in as roughened condition as possible to enhance water harvesting, erosion control and revegetation success. Compacted surfaces such as roads and pads should be deep ripped a minimum of 18 inches.

Seed beds shall be ripped from 18- 24 inches on such as roads. On redistribution of overburden and topsoils the bed will be left rough to capture water and discourage traffic over the seeded areas.

c) Seed Mixture - List the species to be seeded:

Provide a seed mix listing adaptable plant species and the rate of seeding that will be used at the site for reclamation. More than one seed mix may be needed, depending upon the areas to be reclaimed. Keep the proposed post-mining land use in mind when developing seed mixes.

Common Name	Species Name	Broadcast seeding Rate lbs/acre
<i>Bottlebrush squirreltail</i>	<u><i>Elymus elymoides</i></u>	3.0
<i>Bluebunch wheatgrass</i>	<u><i>Agropyron spicatum</i></u>	4.0
<i>Indian ricegrass</i>	<u><i>Oryzopsis</i></u>	3.0
<i>Sandberg bluegrass</i>	<u><i>Poa sandbergii</i></u>	0.5
<i>Globemallow</i>	<u><i>Sphaeralcea coccinea</i></u>	0.5
<i>Wyoming big sagebrush</i>	<u><i>Artemisia tridentate</i></u> <u>wyomingensis</u>	0.25
<i>Rubber rabbitbrush</i>	<u><i>Chrysothamnus nauseous</i></u>	1.0
<i>Palmer Penstemon</i>	<u><i>Penstemon Palmeri</i></u>	0.5
<i>Pacific Aster</i>	<u><i>Symphotrichum chilense</i></u> <u>(Nees) Nesom var. chilense</u>	0.1

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Total lbs/acre 12.85

(The Division recommends seeding 12-15 lbs./acre of native and introduced adaptable species of grass, forb, and browse seed for drill seeding and 15-20 lbs./acre for broadcast or hydro seeding. The Division can provide assistance in developing reclamation seed mixes if requested).

d) Seeding Method

Describe method of planting the seed.

The Division recommends planting the seed with a rangeland or farm drill. If broadcast seeding, harrow or rake the seed 1/4 to 2 inch into the soil. Fall is the preferred time to seed.

Seeding will take place in the Fall via broadcasting following the application of ripping and bio-solid addition. When possible seeding will take place concurrently with a season of mining.

e) Fertilization

Describe fertilization method, type(s) and application rate (if needed).

No fertilizers will be used because these only allow more aggressive noxious weeds and/or non-native plants to successfully compete against the seed mixture of native plants.

f) Other Revegetation Procedures

Please describe other reclamation procedures, such as mulching, biosolids application, irrigation, hydroseeding, etc., that may be planned.

Bio-Solids at a rate of 10 tons per acre may be spread to provide organic matter to help the seed mixture get established while keeping the nitrogen content to an absolute minimum to discourage the establishment of noxious weed and non-native plant species.

VIII. Rule R647-4-112 VARIANCE

The Permittee / Operator may request a variance from Rules R647-4-107 (Operation Practices), R647-4-108 (Hole Plugging), and R647-4-111 (Reclamation Practices) by submitting the following information:

- 1.11 the rule(s) which a variance is requested from; (rule number and content)
- 1.12 a description of the specific variance requested and a description of the area affected by the variance request; show this area on the Reclamation Treatments Map(s).
- 1.13 justification for the variance;
- 1.14 alternate methods or measures to be utilized in the variance area.

Variance requests are considered on a site-specific basis. For each variance requested, attach a narrative which addresses the four items listed above.

No variances are being requested in this mine plan.

IX. Rule R647-4-113 - SURETY

A Reclamation surety must be provided to the Division prior to final approval of this application. In calculating this amount, include the following major tasks:

- 1) Clean-up and removal of structures. ***Not applicable.***
- 2) Backfilling, grading and contouring. ***See Appendix 2.***
- 3) Soil material redistribution and stabilization. ***See Appendix 2.***
- 4) Revegetation (preparation, seeding, mulching). ***See Appendix 2.***
- 5) Safety gates, berms, barriers, signs, etc. ***Not applicable.***
- 6) Demolition, removal or burial of facilities/structures, regrading/ripping of facilities areas. ***Not applicable.***
- 7) Regrading, ripping of waste dump tops and slopes. ***See Appendix 2.***
- 8) Regrading/ripping stockpiles, pads and other compacted areas. ***See Appendix 2.***
- 9) Ripping pit floors and access roads. ***See Appendix 2.***
- 10) Drainage reconstruction. ***Not applicable.***
- 11) Mulching, fertilizing and seeding the affected areas. ***See Appendix 2.***
- 12) General site clean up and removal of trash and debris. ***See Appendix 2.***
- 13) Removal/disposal of hazardous materials. ***Not applicable.***
- 14) Equipment mobilization. ***See Appendix 2.***
- 15) Supervision during reclamation. ***See Appendix 2.***

To assist the Division in determining a reasonable surety amount, please attach a reclamation cost estimate which addresses each of the above steps. The areas and treatments included in the reclamation treatments map should correspond with items included in the reclamation cost estimate. The reclamation costs used by the Division must be third party costs.

X. PERMIT FEE [Mined Land Reclamation Act 40-8-7(i)]

The Utah Mined Land Reclamation Act of 1975 [40-8-7 (i)] provides the authority for the assessment of permitting fees. Commencing with the 1998 fiscal year (July 1 - June 30), **and revised July 1, 2002**, annual permit fees are assessed to new and existing notices of intention and annually thereafter until the project disturbances are successfully reclaimed by the Permittee / Operator and released by the Division.

Large mining permits require an initial submission fee and annual fee of \$500.00 for surface disturbance of 50 or less acres, or a \$1,000.00 fee for surface disturbance greater than 50 acres (see page six Section III, Rule R647-4-106.3 for estimated disturbance calculation). The appropriate fee MUST accompany this application or it cannot be processed by the Division.

PLEASE NOTE: If you are expanding from a small mining operation to a large mining operation, the appropriate large mine permit fee, less the annual \$150.00 small mine fee (if already paid) MUST accompany this application.

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XI. SIGNATURE REQUIREMENT

I hereby certify that the foregoing is true and correct. (Note: This form must be signed by the owner or officer of the company/corporation who is authorized to bind the company/corporation).

Signature of Permittee / Operator/Applicant: A.K. MuellerName (typed or print): A.K. MuellerTitle/Position (if applicable): PresidentDate: January 22, 2007PLEASE NOTE:

Section 40-8-13(2) of the Mined Land Reclamation Act provides for maintenance of confidentiality concerning certain portions of this report. Please check to see that any information desired to be held confidential is so labeled and included on separate sheets or maps.

Only information relating to the location, size or nature of the deposit may be protected as confidential.

Confidential Information Enclosed: () Yes (X) No

Attachment IVegetation Cover Sampling

Vegetation cover sampling determines the amount of ground that is covered by live vegetation. It is divided into four categories which equal 100 percent. They are:

Vegetation - This is the live perennial vegetation. Care should be taken to avoid sampling in disturbed areas that have a large percentage of annual or weedy vegetation, such as cheatgrass and russian thistle.

Litter - This is the dead vegetation on the ground, such as leaf and stem litter.

Rock/rock fragments - This is the rock and rock fragments on the soil surface.

Bare ground - This is the bare soil which is exposed to wind and water erosion.

Cover Sampling - The following methods are acceptable:

Ocular Estimation

This method visually estimates the percentage of ground covered in a plot by the four components. Plot size is usually a meter or yard square or a circular plot 36 inches in diameter. Ten to twenty plots should be randomly sampled in each major vegetation type.

Line Intercept

Percent ground cover is obtained by stretching a tape measure (usually 100') over the ground and then recording which of the four components is under each foot mark. At least ten of these transects should be randomly laid out and measured in each major vegetation type.

Soil Survey and Sampling Methods

If a Natural Resource Conservation Service or land management agency soil survey is not available, the Permittee / Operator shall delineate all soil types that will be disturbed by mining on a map. Each soil type shall be sampled for its characteristics and inherent properties. Representative sampling locations should have similar geologic parent material, slopes, vegetative communities and aspects. The sampling locations should be representative of the soil type and be identified on the map. Sampling shall be at a minimum of one for each soil type disturbed.

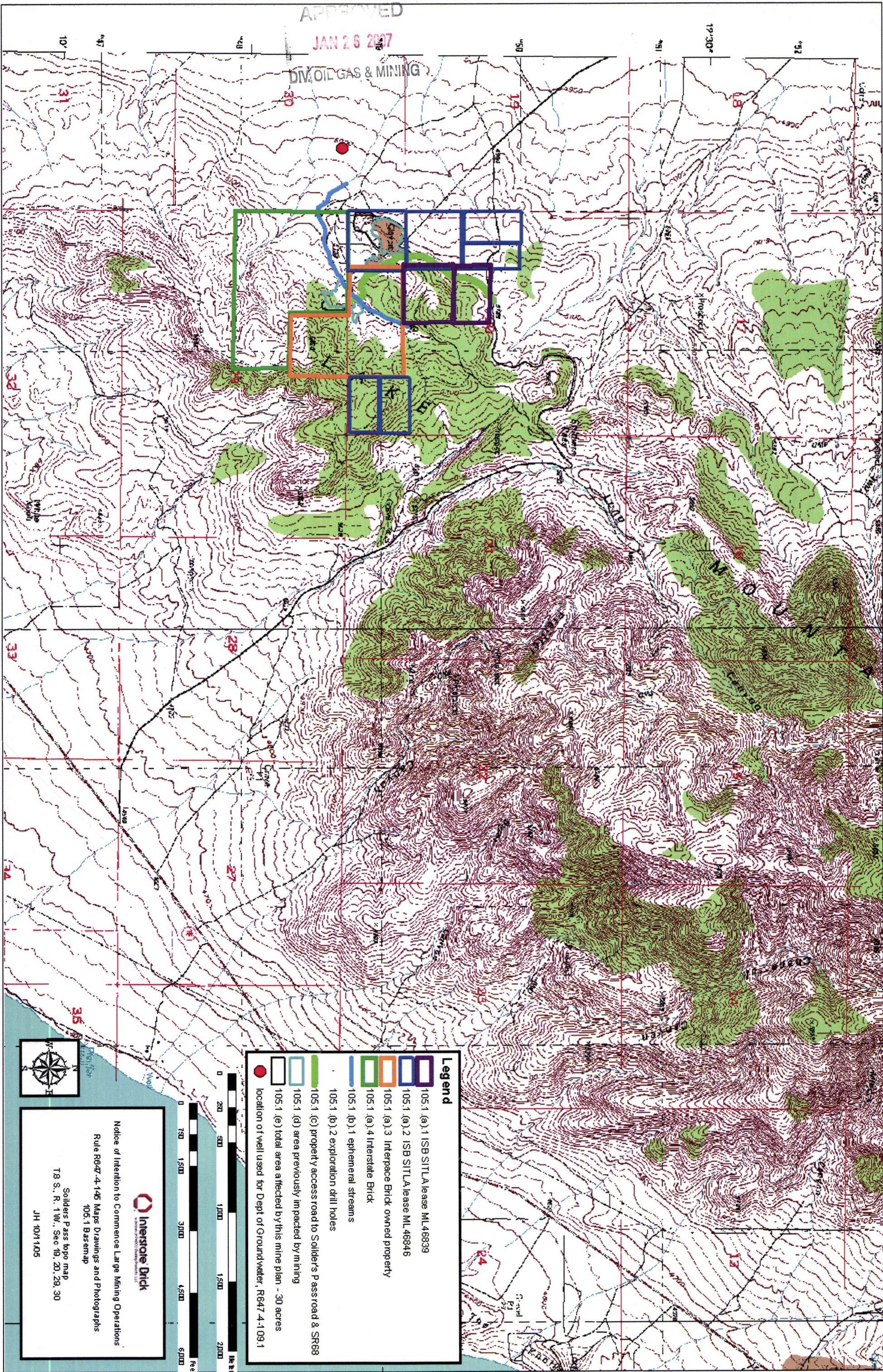
The soil map needs to be of sufficient scale so that each soil type can be accurately located on the ground. ***See Appendix 1, Baseline Soil Assessment. Soil map located on page 4.***

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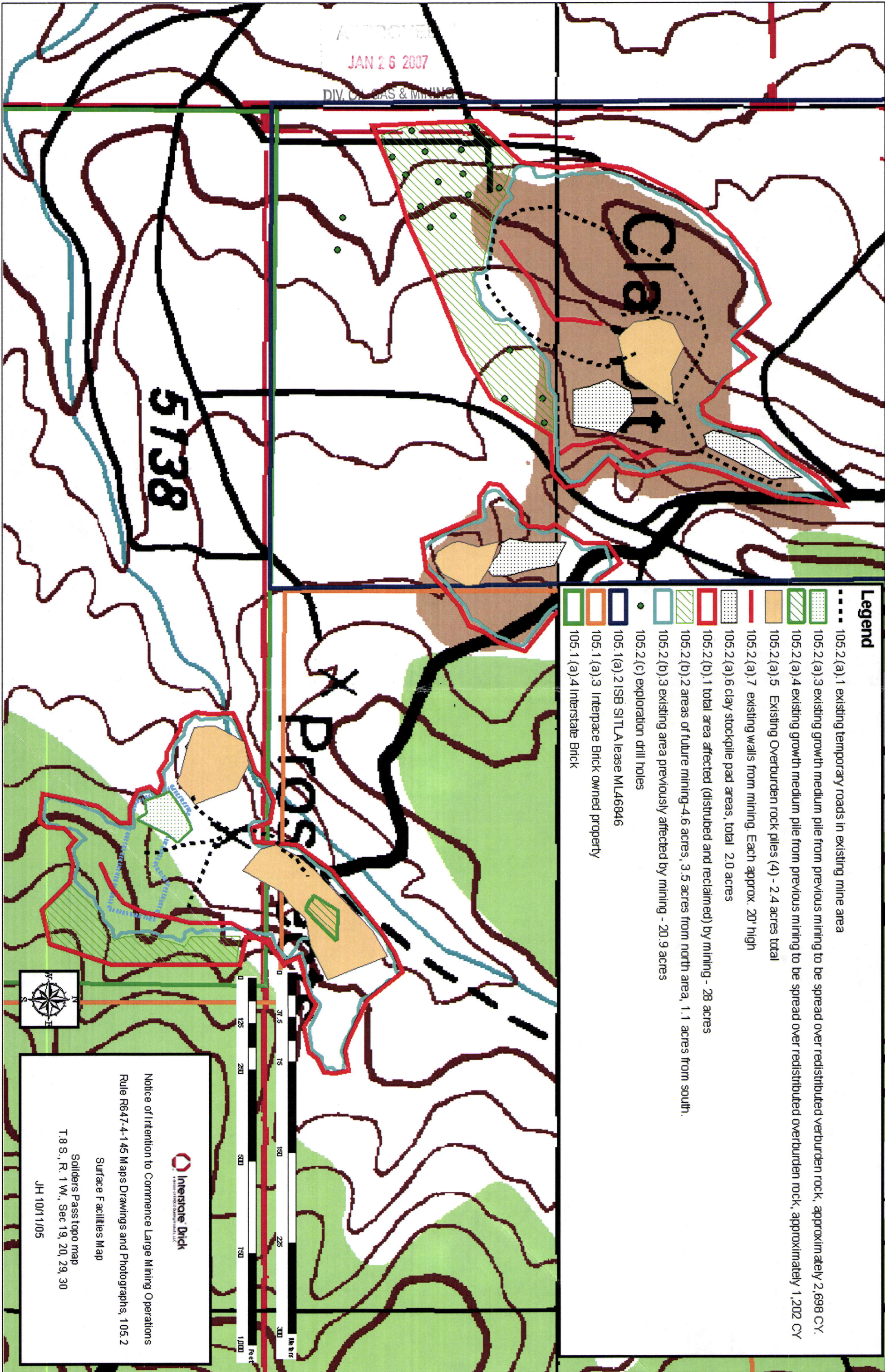
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cross section 5

cross section 4

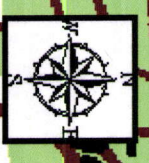
cross section 3

cross section 2

cross section 1

Legend

- 105.3.(a) transects for cross section drawings and photos (see Appendix 2)
- 105.3.(a).1 Roads to remain for post mining access.
- 105.2.(a).1 temporary mining roads to be ripped (typical) for reclamation, 3,100ft
- 105.3.(a).14 area to be treated with biosolids, 20 acres, @ 10 ton/acre
- 105.2.(a).4 existing undisturbed top soil, 3.5 acres North area (6,578 CY @ 14" dept) and 1.1 acres South area (886 CY @ 6" thick)
- 105.3.(a).11 redistributed top soil from future mining areas (Item 105.2.(b).2)
- 105.3.(a).10 area where rock has been redistributed and growth medium /top soil deposited, prepared for seeding, 1 acre
- 105.3.(a).2 existing growth medium pile from previous mining to be spread over redistributed verburden rock, approximately 2,698 CY.
- 105.3.(a).15 existing topsoil/growth medium pile, 105.3.(a).2, after redistributing, 1,202 CY spread over 1.4 acres, 6" thick
- 105.3.(a).13 GPS outline of existing overburden piles
- 105.3.(a).4 previously mined overburden rock on Interpace Brick property, 12,939CY
- 105.3.(a).7 previously mined rock overburden, moved out of ephemeral stream, 10,560 CY
- 105.3.(a).12 area where travertine overburden to be deposited (re-filling in previously mined areas)
- 105.3.(a).8 previously mined rock overburden pile, 4,274 CY
- 105.3.(a).9 previously mined rock overburden, 26,394 CY
- 105.3.(b) total area covered under reclamation - 28 acres (north area: 16 acres; middle area - 2 acres; south area - 10 acres)
- 105.1.(a).2 ISB SITLA lease ML46846
- 105.1.(a).3 Interpace Brick owned property
- 105.1.(a).4 Interstate Brick
- 105.3.(a).6 typical exposed mine faces to be graded to less than 3H:1V



Interstate Brick
Division of The Brick Company, Inc.

Notice of Intention to Commence Large Mining Operations
Rule R647-4-145 Maps Drawings and Photographs, 105.2
Reclamation Treatments Map











Solders Pass topo map
T.8 S., R. 1 W., Sec 19, 20, 29, 30
JH 10/11/05

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Legend

-  2. location of temporary topsoil pile
-  1. area where top soil was removed 2005 1.0 acres
-  3. travertine overburden distribution area - .8 acres
-  4. ine face at end of mining
-  5. earth berm left at end of mining
-  6. area mined in 2005
-  7. white clay stockpile
-  8. pink clay stockpile
-  9. roads used in mining
-  10. top soil distribution area - seeded fall 2005 - 1 acre

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Meters

0 25 50 100 150 200

0 125 250 500 750 1,000

Feet



See also Appendix 3
Maps, Drawings & Photographs 106.6 Map
Showing typical mining campaign

Mining done Spring 2005, Snow White Mine, on Sitla Lease ML 46846, Lot 12. Located in the SW4SW4 of Section 20, T. 7 S., R. 1 W. SLBM

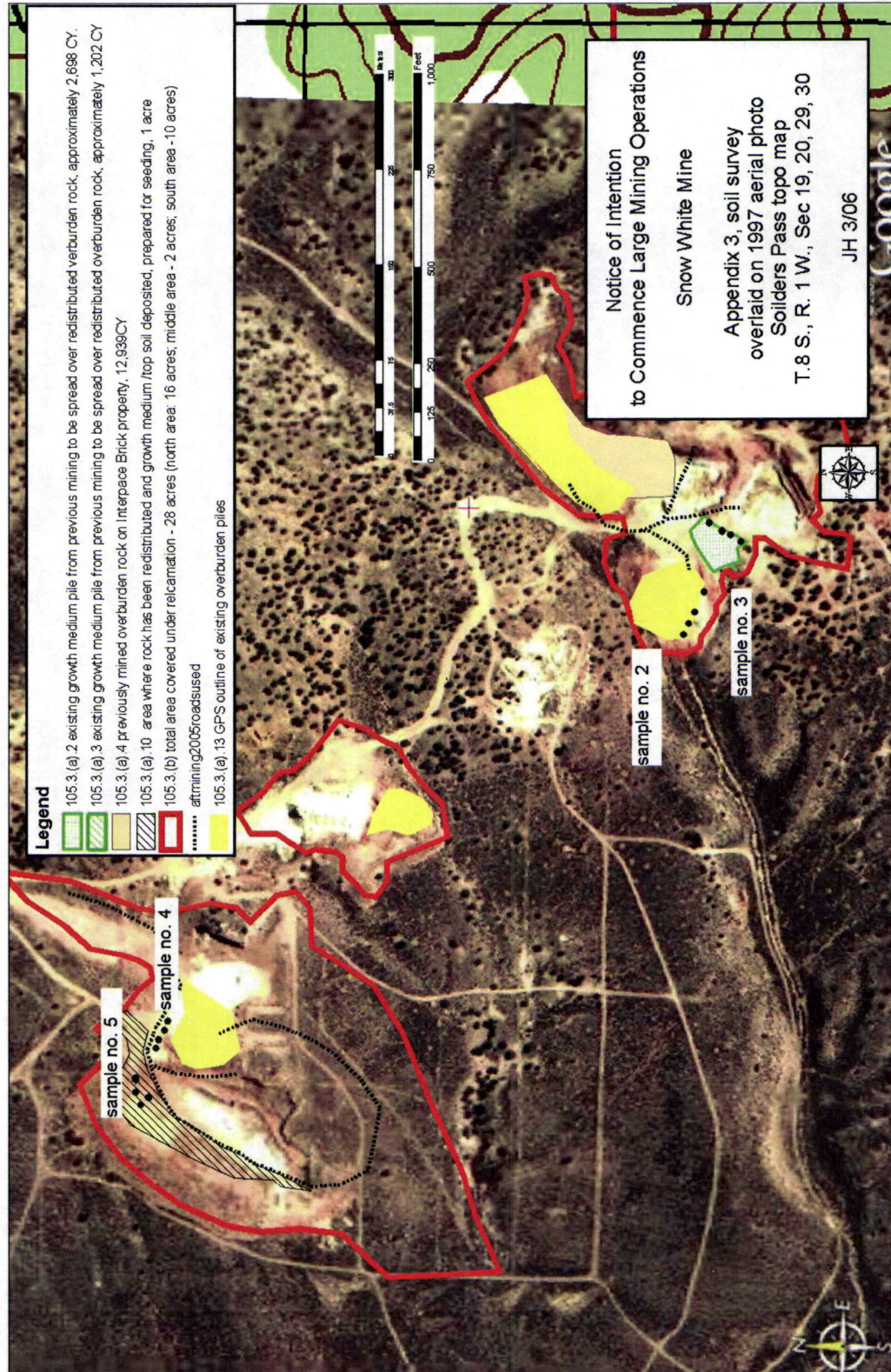
**106.6 Overlay Of US Dept. Of Agriculture Soil Map, Existing Soil Designation And
What Soils Impacted By Mining (see also Appendix 3)**

Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County

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Baseline Vegetation and Soil Assessment at Snow White Mine

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Prepared for:
Interstate Brick
9780 South 5200 West
South Jordan, UT 84088

Prepared by:



WP Natural Resource Consulting, LLC
PO Box 520604
SLC, UT 84152
(801) 699-5459

INTRODUCTION

Interstate Brick has been requested to submit a large mining operation permit for the Snow White Mine in Utah County, sections 20 and 29 in Township 7 South, Range 1 West. The permit is needed for compliance with regulatory rules per the Utah Division of Oil Gas and Mining (DOGM). The purpose of this report is to provide a baseline characterization of soils and vegetation according to the requirements of the DOGM. This information will assist in the design of a site appropriate and effective reclamation plan.

SITE DESCRIPTION

The area lies in Utah County on the west side of Utah Lake on the Soldier's Pass topographic quadrangle. The area lies between 5100 to 5400 feet elevation and receives between 10 and 12 inches of precipitation annually. The highest precipitation months in this area are March, April and May, with about 1 to 1.5 inches of precipitation each month. The freeze free season is about 100-140 days (NRCS, 1984).

The slopes of the Snow White Mine permitted boundary range from 2 to about 25%. These

Figure 1. Vegetation communities at Snow White Mine.



variations in topography, as well as past and present land use and disturbances in the area, are major determinants of soil and vegetation type. The area is a mosaic of gently sloping valley bottoms and steeper, rocky hillsides. As such, two vegetation types are present at the Snow White Mine- juniper woodlands and sagebrush shrublands. The lower valleys- underlain by deeper soils- are dominated by Wyoming and black sagebrush (*Artemisia tridentata* var. *wyomingensis* and *A. nova*), with relatively little understory of perennial grasses. The hillsides – underlain by shallow, rocky soils- are characterized by a juniper overstory with an understory of sparse perennial grasses. The potential vegetation of the site (NRCS, 1984) ranges from 20-60% perennial grasses, 5-10% forbs and 30-75% shrubs (relative cover). Through various disturbances and

drought in the recent past, the vegetation communities at the Snow White mine site are not at their full potential.

SOILS

The NRCS soil survey delineates three distinct soil types present in the Snow White mine area. The following descriptions of the soils types are headed by their **NRCS code**, *soil association name* and 'soil classification.'

AmE - *Atepic shaly loam*. 'Loamy carbonatic mesic shallow Xerollic Calciorthids.' This soil lays on 10-40% foothill slopes, is shallow and well drained. Although the soil is well drained, the permeability is slow. The soil developed chiefly in shale residuum. The surface layer is a shaly loam texture about 6 inches thick. The subsoil is a shaly silty clay loam about 9 inches thick. The bedrock consists of soft shale and lies between 10 to 20 inches below the surface. The potential plant community is about 20% perennial grasses, 5% forbs and 75% shrubs. As is the case with most soils of shale origin, the erosion hazard is high. The pH at the surface of this soil ranges from 7.9-8.4, and the pH in the subsoil layer ranges from 8.5-9.0. The characteristics of this soil are poorly suited for seeding due to its high alkalinity and shallow depth.

AcE *Amtoft Rock Outcrop complex*. 'Loamy skeletal carbonatic mesic Lithic Xerollic Calciorthids.' This soil type lies on hillsides and ridges of 8-30% slopes, and is about 60% Amtoft stony loams and 20% rock outcrops. The Amtoft soil is shallow and drains well. It was formed from residuum and colluvium from primarily sedimentary rocks. The surface layer is about 5 inches thick and is a stony loam texture. The subsoil is a very cobbly loam about 14 inches thick. The bedrock is limestone and lies at a depth ranging from 10-20 inches deep. The rock outcrop complex of this soil association is simply exposed areas of limestone. The potential plant community is about 50% perennial grasses, 8% forbs, and 42% shrubs. However, thick stands of juniper can develop and have developed from excessive grazing and fire suppression over the decades. The alkalinity of this soil ranges from a pH of 7.9 to 9.0 throughout the profile.

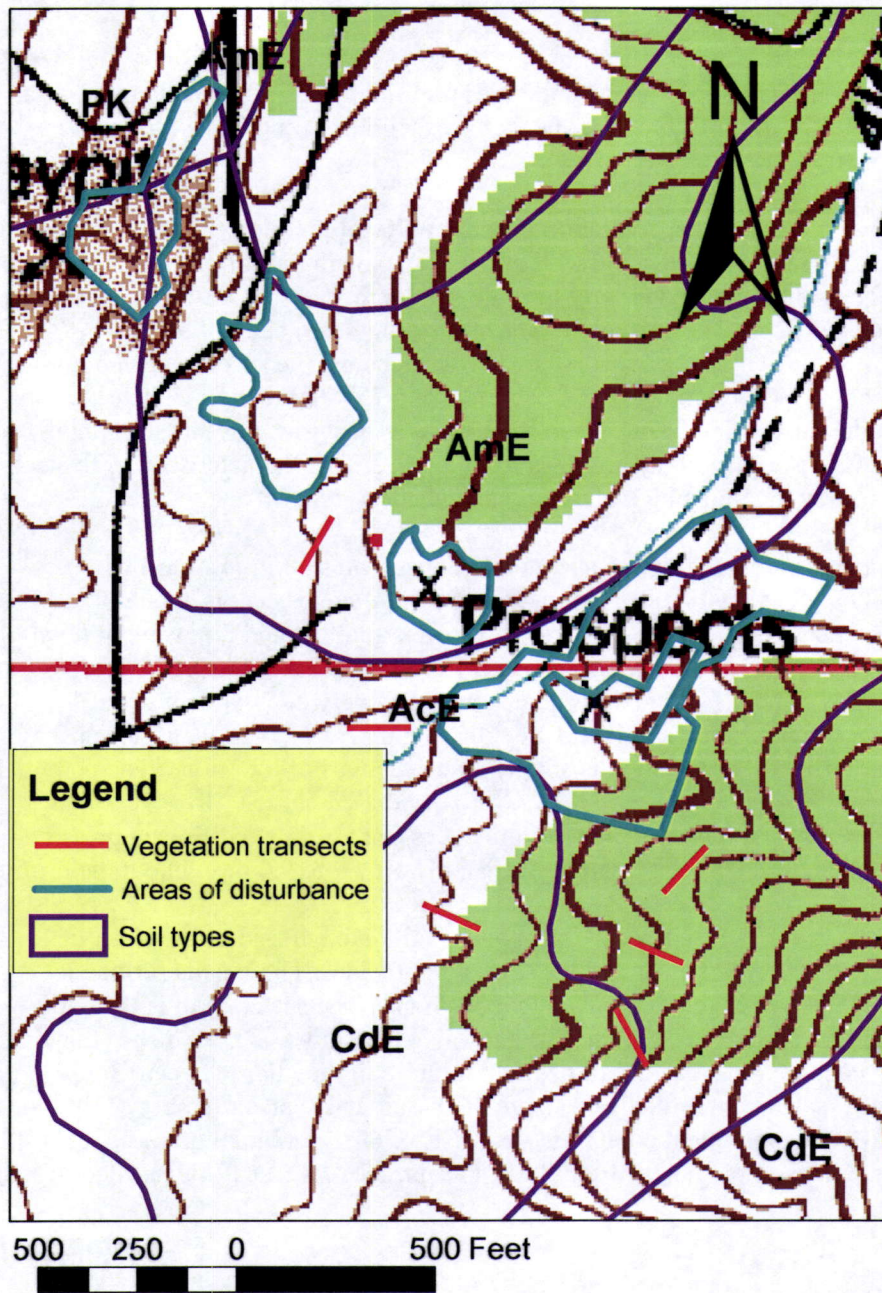
CdE- *Checkett, moist Rock outcrop complex*. 'Loamy skeletal mixed, mesic Lithic Xerollic Haplargids.' The Checkett soil type lies on 8-40% slopes on hillsides. These soils formed in residuum and colluvium derived dominantly from igneous rocks. The surface soil is typically only 2 inches thick and is a stony loam texture. The subsoil is typically about 10 inches thick and is a very gravelly clay loam texture. The basalt bedrock in this soil type lies between 10 to 18 inches below the surface. A substratum lies just above the basalt and is an extremely cobbly loam about 6 inches deep. The potential plant community consists of 60% perennial grasses, 10% forbs, and 30% shrubs. The soil pH ranges from 8.0 at the surface to 8.6 at 12 inches depth.

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Figure 2. Location of soil types, vegetation transects and areas of disturbance at Snow White Mine



METHODS

To ascertain the range of variability for vegetation cover, ground cover, and species composition, 3 transects of 50 meters each were established in the two vegetation types in areas determined to be representative of the vegetation (See Figure 2). Once within a stand of typical vegetation, a pin was spun to randomly determine the azimuth of the transect. At 5 meter intervals along the transect, a square meter plot was placed on the ground. Vegetation (by species), litter, rock,

gravel, or bare ground was recorded by percent cover within the plot. A total of 6 transects and 60 square meter plots were examined. The six transects were placed throughout the mining area in relatively undisturbed vegetation communities.

RESULTS

Vegetation communities at the site are in various stages of recovery/regeneration and/or degeneration according to past disturbance histories and land use practices. The combination of large shrubs and/or trees and a deficient understory in the area led to widely varying results for vegetation cover. In the sagebrush shrublands, the vegetation cover average was 24.6% with a standard deviation larger than the average (25.8%). Likewise, in the juniper woodlands, the average vegetation cover was 13.4% with a standard deviation of 20.5%. A secondary method of a line transect was used to assess vegetation cover in the juniper woodlands. This method yielded an average vegetation cover of 22.1% +/- 7.9%. Although the results between the two methods do vary widely, the standard deviation values do overlap between the two methods, further revealing the large range of variation typical of this vegetation type.

In the juniper woodland type, junipers provide the most vegetation cover with a relative cover of 67%. Cool season perennial grasses provide about 19.5% of the vegetation cover and perennial forbs contribute 6.5% of the vegetation cover. Shrubs and sub-shrubs account for almost 7% of the vegetation cover.

In the sagebrush shrublands, Wyoming sagebrush accounts for about 93% of the vegetation cover, with black sagebrush providing about 4%. Cool season perennial grasses provide only 1.8% of the vegetation cover in this vegetation type.

Tables 1 and 2 show complete tabulated results of the two vegetation types.

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Photos of vegetation transects

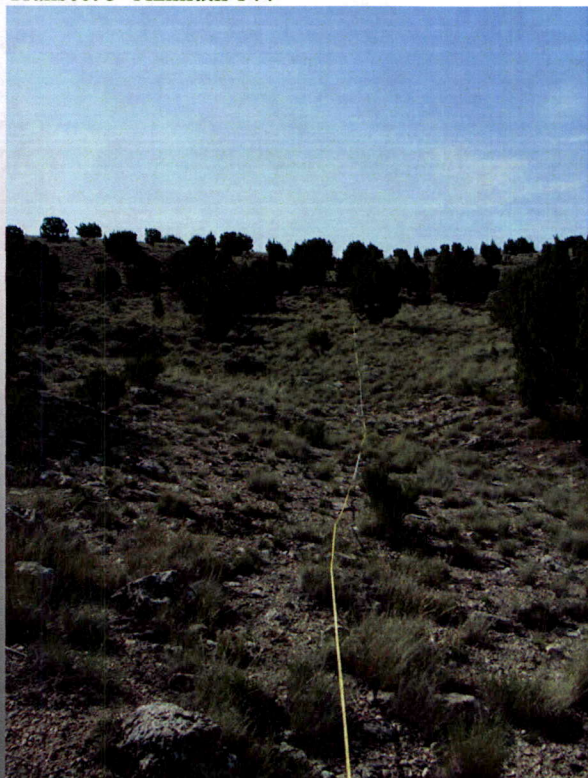
Transect 1 – Azimuth 265°



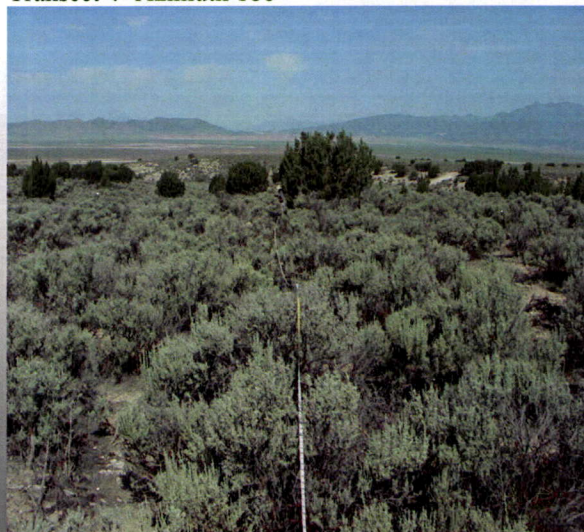
Transect 2 Azimuth 116°



Transect 3- Azimuth 144°



Transect 4- Azimuth 186°

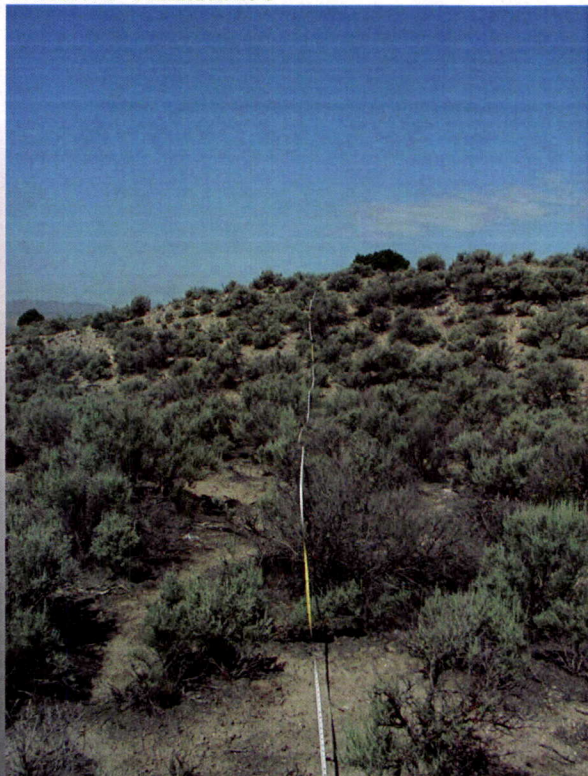


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Transect 5- Azimuth 256°



Transect 6- Azimuth 208°



An appropriate reclamation seed mix for the Snow White Mine:

Common Name	Scientific Name	Rate (per acre)
Grasses		
Indian ricegrass	<i>Oryzopsis hymenoides</i> <i>var Paloma.</i>	3
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i> <i>ssp. spicata</i>	4
Sandberg's bluegrass	<i>Poa sandbergii</i>	3
Bottlebrush squirreltail	<i>Elymus elymoides</i>	3
Forbs		
Globemallow	<i>Sphaeralcea coccinea</i>	0.5
Shrubs		
Rabbitbrush	<i>Chrysothamnus</i> <i>nauseosus</i>	1
Wyoming sagebrush	<i>Artemisia tridentata var</i> <i>wyomingensis</i>	1/2
TOTAL		15 PLS lbs/ acre

Table 1. Sagebrush Vegetation Community at Snow White Mine

	ScientificName	Average	St Deviation	Low	High	Rel Cover	Frequency
Total Vegetation Cover	Total Vegetation Cover	24.600	25.820	2.000	88.000		100.00
Litter	Litter	32.900	26.430	1.000	96.000		100.00
Rock	Rock	0.730	2.150	3.000	10.000		100.00
Gravel	Gravel	23.670	30.590	0.000	89.000		66.67
Bare Soil	Bare Soil	18.100	27.770	0.000	94.000		100.00
Total Ground Cover	Total Cover	81.967	27.780	6.000	100.000		100.00
Cool season perennial grasses							
Bluebunch wheatgrass	<i>Agropyron spicatum</i>	0.100	0.410	0.000	2.000	0.41	6.67
Indian ricegrass	<i>Onyzopsis hymenoides</i>	0.034	0.189	0.000	2.000	0.14	3.33
Sandberg's bluegrass	<i>Poa sandbergii</i>	0.000	0.000	0.000	0.000	0.00	3.33
Bottlebrush squirreltail	<i>Sitanion hystrix</i>	0.300	0.850	0.000	3.000	1.22	10.00
Sub-total		0.434				1.77	
Shrubs							
Black sagebrush	<i>Artemisia nova</i>	1.030	7.376	0.000	31.000	4.21	6.67
Wyoming sagebrush	<i>Artemisia tridentata</i>	22.930	26.290	0.000	88.000	93.37	80.00
Shadscale	<i>Atriplex confertifolia</i>	0.000	0.000	0.000	0.000	0.00	3.33
Douglas rabbitbrush	<i>Chrysothamnus viscidiflorus</i>	0.130	0.440	0.000	2.000	0.05	6.67
Golden bush	<i>Haplopappus watsonii</i>	0.067	257.000	0.000	1.000	0.27	3.33
Spiny horsebrush	<i>Tetradymia spinescens</i>	0.000	0.000	0.000	0.000	0.00	3.33
Sub-total		24.157				97.91	

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Table 2. Juniper Woodland Vegetation Community at Snow White Mine

	ScientificName	Average	St Deviation	Low	High	Rel Cover	Frequency
Total Vegetation Cover	Total Vegetation Cover	13.370	20.530	0.000	85.000		100.00
Litter	Litter	13.600	23.670	1.000	100.000		100.00
Rock	Rock	6.700	8.210	1.000	33.000		100.00
Gravel	Gravel	60.800	32.610	0.000	97.000		86.67
Bare Soil	Bare Soil	5.533	16.051	0.000	85.000		100.00
Total Ground Cover	Total Cover	94.470	16.050	15.000	100.000		100.00
Cool season perennial grasses							
Bluebunch wheatgrass	<i>Agropyron spicatum</i>	2.167	4.893	0.000	21.000	16.22	26.67
Indian ricegrass	<i>Oryzopsis hymenoides</i>	0.233	0.971	0.000	5.000	1.75	6.67
Needle and thread	<i>Stipa comata</i>	0.200	1.090	0.000	3.000	1.49	6.67
Sandberg's bluegrass	<i>Poa sandbergii</i>	0.000	0.000	0.000	0.000	0.00	3.33
Sub-total		2.6				19.46	
Perennial forbs							
Cat's eye	<i>Cryptantha spp</i>	0.033	0.183	0.000	1.000	0.25	3.33
Fleabane	<i>Erigeron spp</i>	0.330	0.182	0.000	2.000	0.25	3.33
Sun dancer daisy	<i>Haplopappus acaulis</i>	0.633	1.273	0.000	4.000	4.74	23.33
Hood's phlox	<i>Phlox hoodii</i>	0.167	0.592	0.000	3.000	1.25	13.33
Sub-total		1.16				6.49	
Sub-shrubs							
Broom snakeweed	<i>Gutierrezia sarothrae</i>	0.200	610.000	0.000	1.000	1.50	6.67

	Scientific Name	Average	St Deviation	Low	High	Rel Cover	Frequency
Shrubs							
Black sagebrush	<i>Artemisia nova</i>	0.533	2.285	0.000	12.000	3.99	6.67
Douglas rabbitbrush	<i>Chrysothamnus viscidiflorus</i>	0.070	365.000	0.000	3.000	0.50	3.33
Golden bush	<i>Haplopappus watsonii</i>	0.133	0.507	0.000	2.000	0.99	6.67
Sub-total		0.736				5.48	
Trees							
Utah juniper	<i>Juniperus osteosperma</i>	9.000	21.390	0.000	85.000	67.36	20.00

Appendix 3, Soils Tests And Analysis

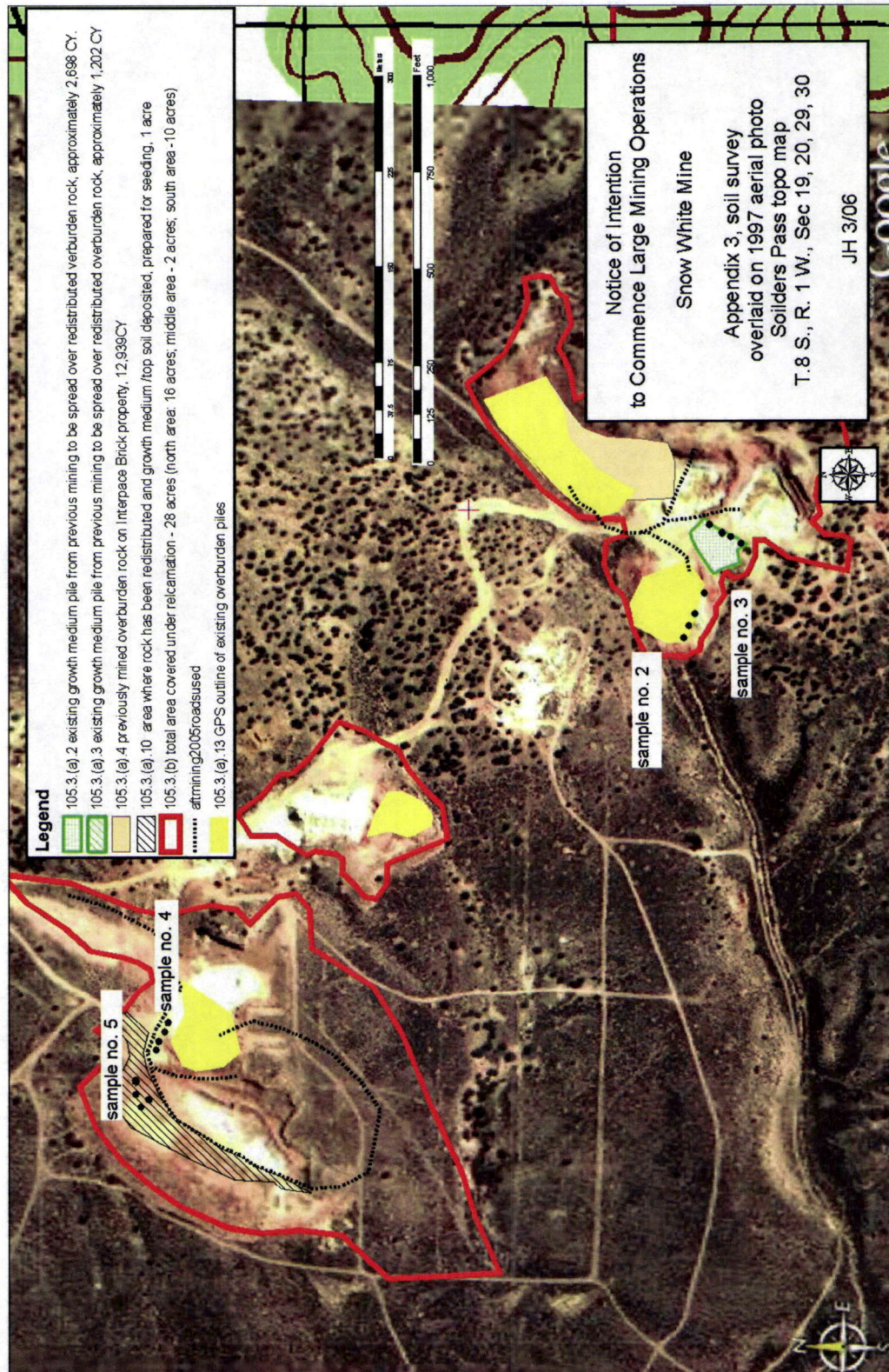
Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County

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Appendix 3, Soils Tests And Analysis

Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County

Page 2 of 5

Sample no. 2. Composite sample taken from the west side overburden rock pile
designated

105.3.(a).7 on Reclamation Treatments Map

Soil Test Report And

Fertilizer

USU Analytical Labs

Utah State University

Logan, Utah 84322-4830

(435) 797-

(435) 797-2117 (FAX)

www.usual.usu.edu

Date 2/15/2006

Date 3/6/2006

Name: INTERSTATE BRICK CO

Address: 9780 S 5200 W

ATTN FRANKIE

WEST JORDAN UT 84088-5625

Phone: 801-301-6729

County: SALT LAKE

Lab Number: 6010196

Grower's

Acres in

Identification: 2

Crop to be Grown:

Soil Test	Interpretations	Recommendations
Texture	Sandy Clay	
pH	8.0	Normal
Salinity - ECe	0.9	
Phosphorus - P mg/kg	3.3	
Potassium - K	107	
Nitrate-Nitrogen - N mg/kg		
Zinc - Zn		
Iron - Fe mg/kg		
Copper - Cu		
Manganese - Mn		
Sulfate-Sulfur - S		
Organic Matter	0.9	
SAR	5.66	Soil Not Sodic

Notes:

SAND: 47%

SILT: 19%

CLAY: 34%

TOTAL N = 0.05%

CATION EXCHANGE CAPACITY (CEC) = 20.9 meq/100g

For further assistance, please see your County Agent

For further information and publications of interest, see

[USU Analytical Lab webpage](#) or [Utah State University Extension](#)

Appendix 3, Soils Tests And Analysis

Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County

Page 3 of 5

Sample no. 3. Composite sample taken from the south side of top soil pile designated
105.3.(a).2 on Reclamation Treatments Map

Soil Test Report And

Fertilizer

Date 2/15/2006
Date 3/6/2006
Name: INTERSTATE BRICK CO
Address: 9780 S 5200 W
ATTN FRANKIE
WEST JORDAN UT 84088-5625

Lab Number: 6010197

Identification: 3

Crop to be Grown:

USU Analytical Labs

Utah State University
Logan, Utah 84322-4830
(435) 797-
(435) 797-2117 (FAX)
www.usual.usu.edu

Phone: 801-301-6729

County: SALT LAKE

Grower's

Acres in

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Soil Test	Interpretations	Recommendations
Texture	Sandy Clay	
pH	7.6	Normal
Salinity - ECe	3.02	
Phosphorus - P mg/kg	4.1	
Potassium - K	297	
Nitrate-Nitrogen - N mg/kg		
Zinc - Zn		
Iron - Fe mg/kg		
Copper - Cu		
Manganese - Mn		
Sulfate-Sulfur - S		
Organic Matter	3.2	
SAR	4.40	Soil Not Sodic

Notes:

SAND: 45%

SILT: 25%

CLAY: 30%

TOTAL N = 0.12%

CATION EXCHANGE CAPACITY (CEC) = 16.4 meq/100g

For further assistance, please see your County Agent

For further information and publications of interest, see

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Appendix 3, Soils Tests And Analysis

Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County

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Sample no. 4 Composite sample of the mine floor taken approximately 20 ft to the north west of the rock overburden pile designated 105.3.(a).9 on Reclamation Treatments Map

Soil Test Report And

Fertilizer

USU Analytical Labs

Utah State University

Logan, Utah 84322-4830

(435) 797-

(435) 797-2117 (FAX)

www.usual.usu.edu

Date 2/15/2006

Date 3/6/2006

Name: INTERSTATE BRICK CO

Address: 9780 S 5200 W

ATTN FRANKIE

WEST JORDAN UT 84088-5625

Phone: 801-301-6729

County: SALT LAKE

Lab Number: 6010198

Grower's

Acres in

Identification: 4

Crop to be Grown:

Soil Test	Interpretations	Recommendations
Texture	Clay Loam	
pH	7.7	Normal
Salinity - ECe	8.26	
Phosphorus - P mg/kg	7.2	
Potassium - K	89	
Nitrate-Nitrogen - N mg/kg		
Zinc - Zn		
Iron - Fe mg/kg		
Copper - Cu		
Manganese - Mn		
Sulfate-Sulfur - S		
Organic Matter	0.7	
SAR	13.4	Soil Not Sodic

Notes:

SAND: 43%

SILT: 20%

CLAY: 37%

TOTAL N = 0.04%

CATION EXCHANGE CAPACITY (CEC) = 11.3 meq/100g

For further assistance, please see your County Agent

For further information and publications of interest, see

USU Analytical Lab webpage or Utah State University Extension

Appendix 3, Soils Tests And Analysis

Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County
Page 5 of 5

Sample no. 5. Composite sample of redistributed top soil that was placed on top of rocky overburden spread over the mine floor from previous mining. Taken from the 1 acre area labeled 105.3.(a).10 on Reclamation Treatments Map.

Soil Test Report And

Fertilizer

USU Analytical Labs

Utah State University
Logan, Utah 84322-4830
(435) 797-
(435) 797-2117 (FAX)
www.usual.usu.edu

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Date 2/15/2006
Date 3/6/2006
Name: INTERSTATE BRICK CO
Address: 9780 S 5200 W
ATTN FRANKIE
WEST JORDAN UT 84088-5625

Phone: 801-301-6729
County: SALT LAKE

Lab Number: 6010199

Grower's

Acres in

Identification: 5

Crop to be Grown:

Soil Test	Interpretations	Recommendations
Texture	Sandy Clay	
pH	7.6	Normal
Salinity - ECe	0.6	
Phosphorus - P mg/kg	59	
Potassium - K	128	
Nitrate-Nitrogen - N mg/kg		
Zinc - Zn		
Iron - Fe mg/kg		
Copper - Cu		
Manganese - Mn		
Sulfate-Sulfur - S		
Organic Matter	3.0	
SAR	0.88	Soil Not Sodic

Notes:

SAND: 60%

SILT: 24%

CLAY: 16%

TOTAL N = 0.07%

CATION EXCHANGE CAPACITY (CEC) = 6.7 meq/100g

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Notice of Intention to Commence Large
Mining Operations
Snow White

Appendix 2

Mine cross-section drawings &
Reclamation Cost Estimate

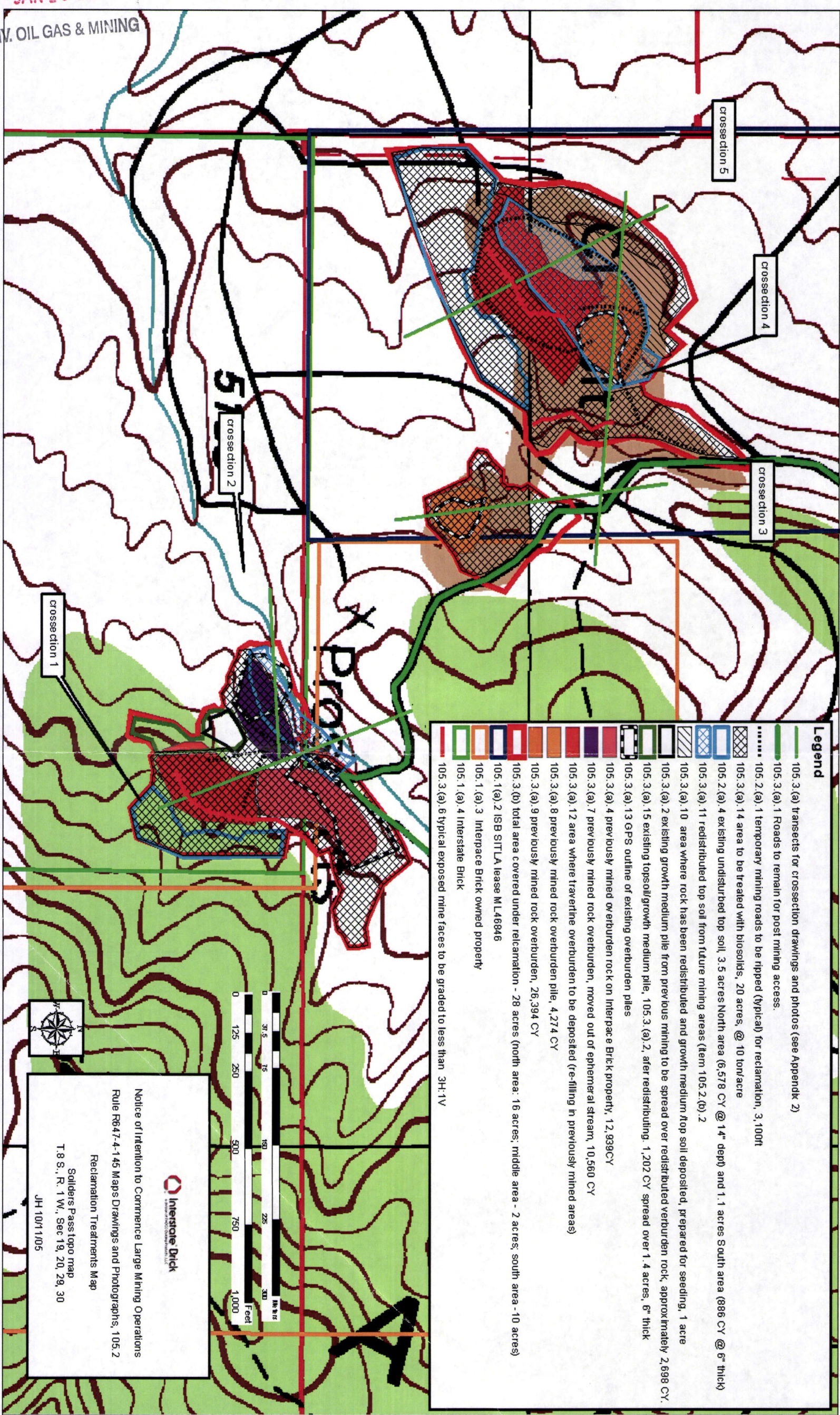
table of contents

page	
2	Reclamation Treatments Map
3	Surface Facilities Map
4	photographs of locations of crossections 1 - 3.
5	photographs of locations of crossections 4 & 5.
6	Crossection 1 drawings
7	Crossection 2 drawings
8	Crossection 3 drawings
9	Crossection 4 drawings
10	Crossectin 5 drawings
11	345 Track Hoe Estimate for pulling back north edge of rock pile 105.3.(a).4 on Reclamation Treatments Map and blending in with natural elevation (also exposing original growth medium). Track hoe to pull back 1/2 of 12,939 CY of pile and stage for the dozer to push material into the trench (105.3.(a).5) and match with hill to south.
12	D8 Dozer time estimate for pushing rock overburden from pile 105.3.(a).4 on Reclamation Treatments Map into trench 105.3.(a).5 - Rec. Treat. Map, and matching material up to original grade to the south.
13	345 track hoe time estimate for pulling back north edge of rock pile 105.3.(a).7 on Reclamation Treatments Map and restoring ephemeral stream bed. Track hoe to pull back 1/3 of 10,560 CY of pile and load dump truck to haul to be redistributed over previously mined area.
14	D8 dozer time estimate for redistributing material pulled back from north edge of rock overburden from pile 105.3.(a).7 on Reclamation Treatments Map. Material will be pushed into previously mined area to south of pile
15	D8 dozer time estimate for grading rock overburden pile 105.3.(a).8 on Reclamation Treatments Map to less than 3H:1V. Estimate pushing 50% of the 4,274 CY in pile.
16	D8 dozer time for grading redistributed rock overburden from pile 105.3.(a).9 on Reclamation Treatments Map to less than 3H:1V. Material to be pushed into previously mined area to the north and east of pile. Estimate pushing down hill 20%, or 5,287CY, of the 26,394 CY in pile.
17	Growth Media requirments
18	D8 dozer time for rippng 20.9 acre area that is presently disturbed from prior mining, using a D8R dozer, with 8' ripper spacing.
19	D8 dozer time for rippng 20.9 acre area that is presently disturbed from prior mining, using a D8R dozer, with 8' ripper spacing.
20	980 Loader time estimate for spreading growth medium material over 20 acres of area 105.3.(a).14 on Reclamation Treatments Map.
21	D* dozer time for sloping walls <3H:1V at end of mining.
22	C769 Dump Truck Time Estimate for hauling rock from pile 105.3.(a).7 on Reclamation Treatments Map to area south of pile to be redistributed over area previously mined.
23	Reclamation Cost Summary

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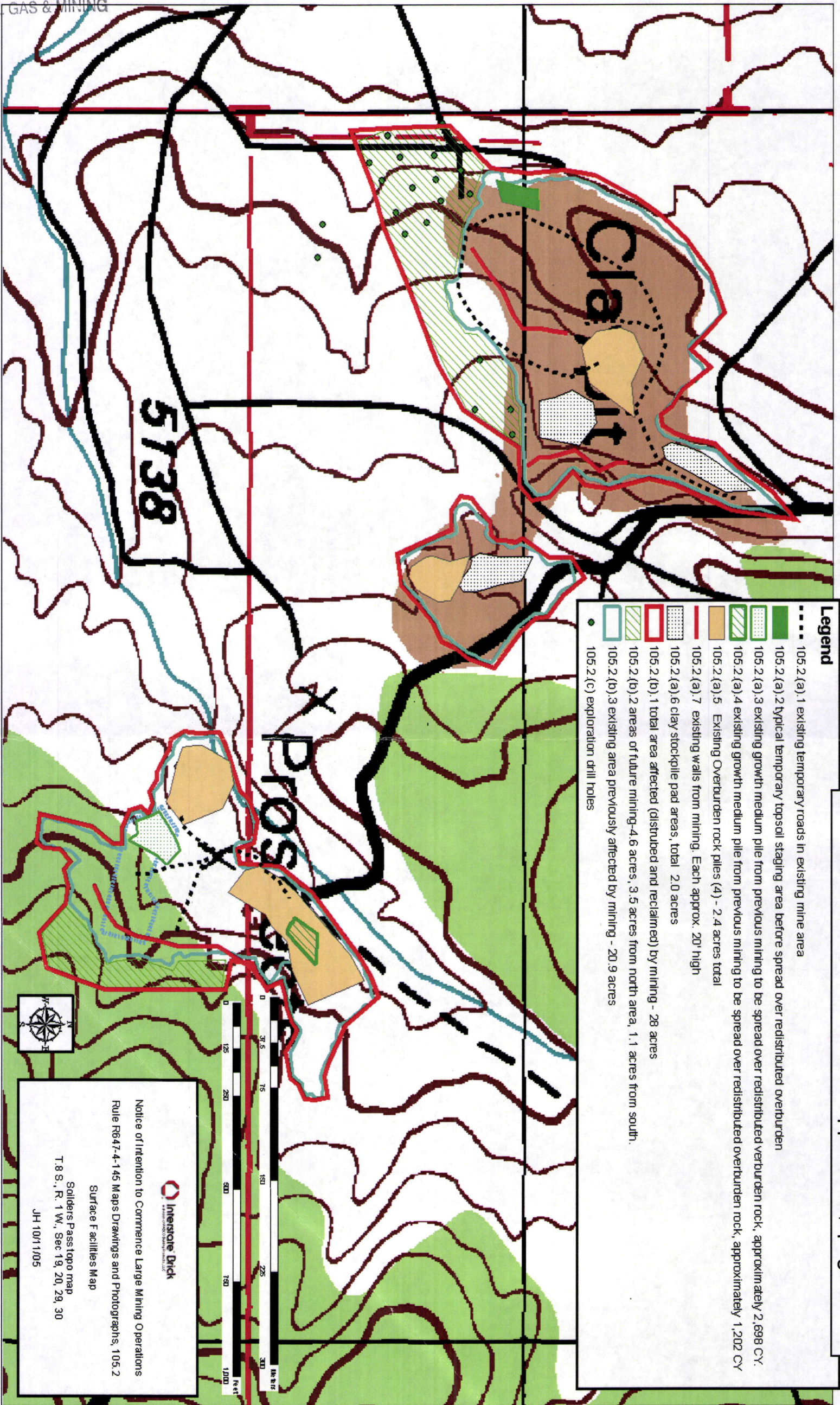
Notice of Intention to Commence Large Mining Operations
Rule R647-4-145 Maps Drawings and Photographs, 1005.2
Reclamation Treatments Map
Soldiers Pass topo map
T.8 S., R. 1 W., Sec 19, 20, 29, 30
JH 10011/05



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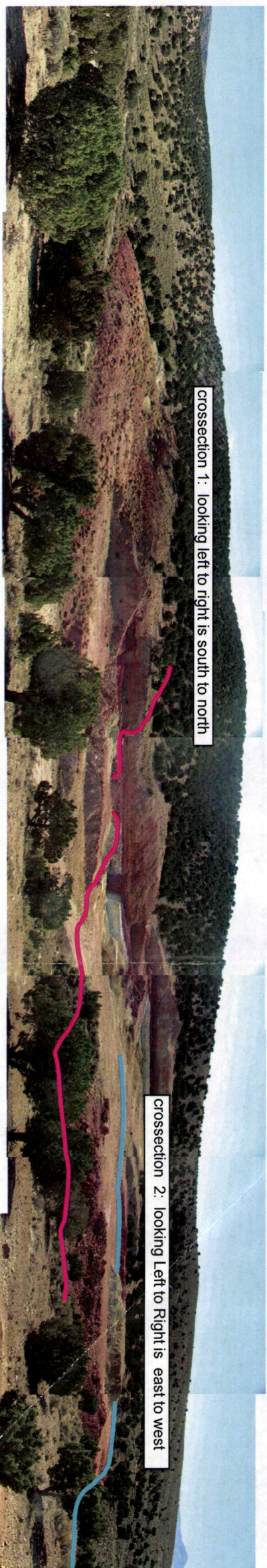
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Snow White N.O.I. For L.M.O. Appendix 2, page 4



crosssection 1: looking left to right is south to north

crosssection 2: looking Left to Right is east to west



crosssection 3: looking left to right is north to south

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Snow White N.O.I. For L.M.O. Appendix 2, page 5

crosssection 5: looking left to right is north to south



crosssection 4: looking from left to right is east to west



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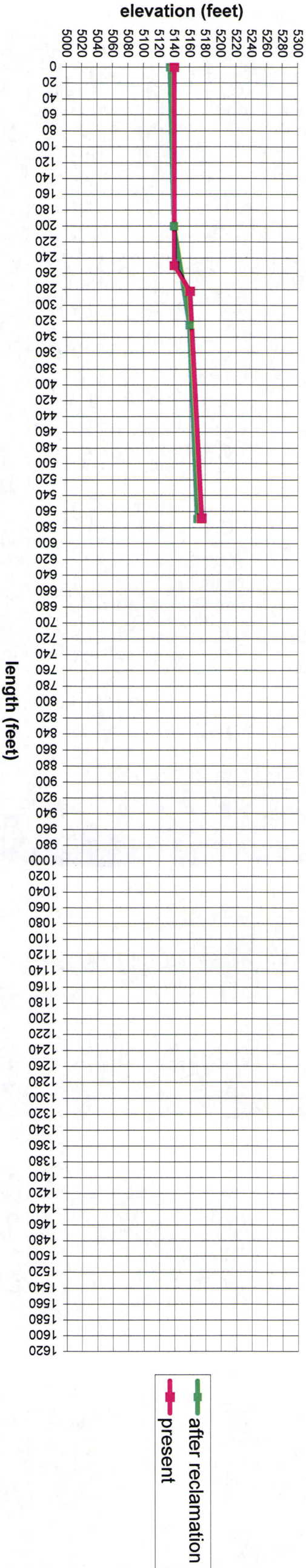
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present						after reclamation	
transect no	pt. no.	UTM North (meters)	UTM east (meters)	dist = $\sqrt{(\text{abs}(x_2-x_1))^2 + (\text{abs}(y_2-y_1))^2}$		X axis on graph: adjusted cumulative length of transect (converted to feet)	
				Y axis on graph: elevation (ft.)	distance between UTM points (meters)		
1	1	416631	4448656	5200	0	0	
	2	416640	4448628	5180	29	96	
	3	416649	4448601	5160	58	190	
	4	416663	4448670	5160	128	421	
	5	416702	4448465	5180	209	1105	
	6	416713	4448447	5200	337	1105	
	7	416720	4448415	5220	358	1174	
	8	416727	4448399	5220	391	1282	
	9			5230	408	1339	
	10						
	11						

5200	0
5180	96
5160	190
5160	421
5170	880
5185	1015
5185	1075
5150	1100
5150	1130
5180	1140
5190	1150
5200	1174
5220	1282
5230	1339

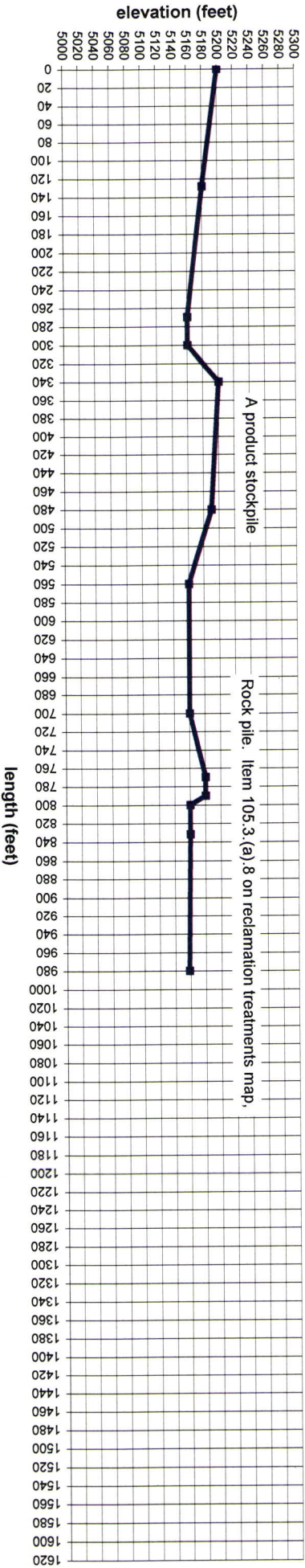
		present		after reclamation	
		dist = sqrt(abs(x ₂ -x ₁) ² +abs(y ₂ -y ₁) ²)			
		Y axis on graph: distance between UTM points		cumulative distance between UTM points	
		elevation (ft.)		X axis on graph: adjusted cumulative length of transect (converted to feet)	
transect no	pt. no.	UTM North (meters)	UTM east (meters)		
	1	416506	4448522	5140	0
	2	416554	4448520	5140	200
	3	416592	4448522	5160	325
	4	416679	4448529	5175	569
5	5				
	6				
	7				
	8				
	9				
	10				
	11				

crosssection 2

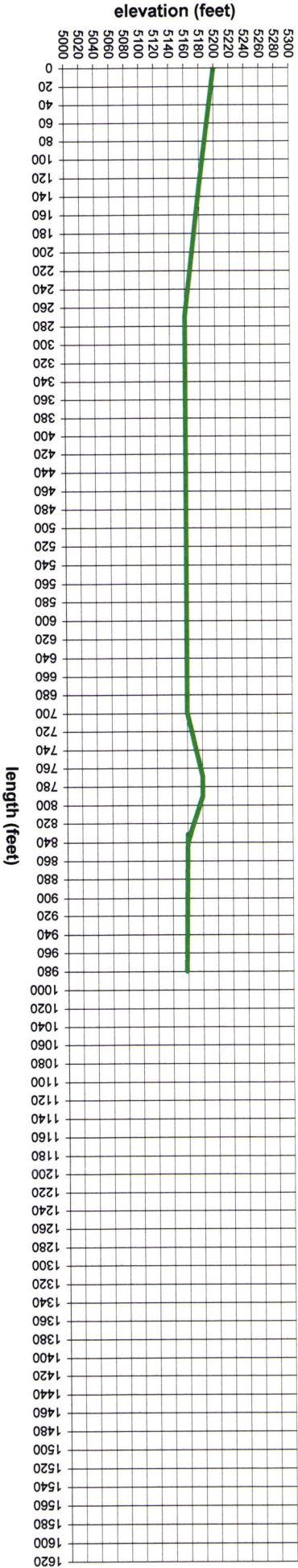


transect no	pt. no.	UTM North (meters)	UTM east (meters)	dist = sqrt(abs(x ₂ -x ₁) ² +abs(y ₂ -y ₁) ²)		X axis on graph: adjusted cumulative length of transect (converted to feet)
				Y axis on graph: elevation (ft.)	distance between UTM points (meters)	Y axis on graph: adjusted cumulative length of transect (converted to feet)
3	1	416438	4448950	5200	0	0
	2	416436	4448911	5180	39	128
	3	416440	4448868	5160	43	270
				5160		300
				5200		340
				5190		480
4				5160	130	560
		416435	4448738	5160		700
				5180		770
				5180		790
				5160		840
				5160	41	832
5		416440	4448697	5160		980
6		416436	4448652	5158	45	980

crossection 3



crossection 3 at end of project

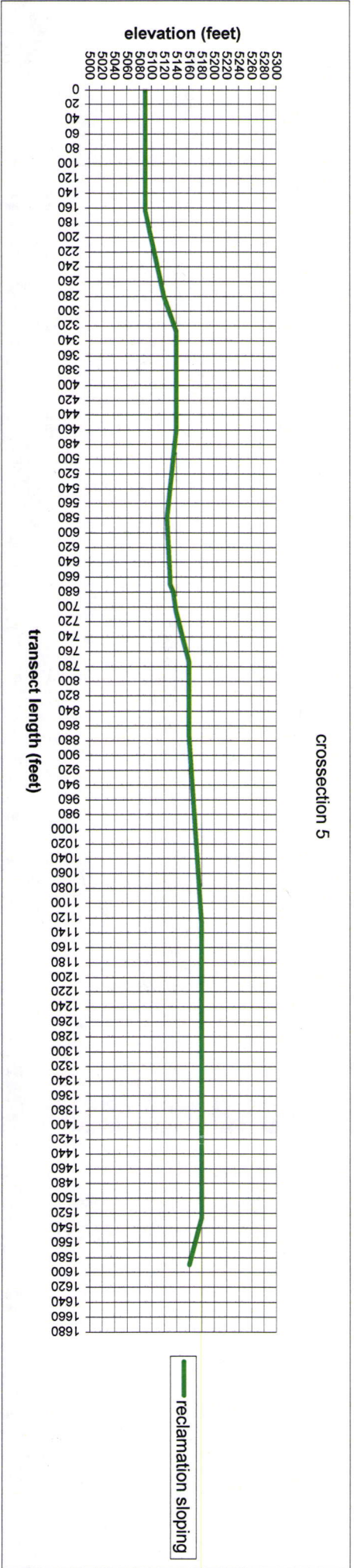
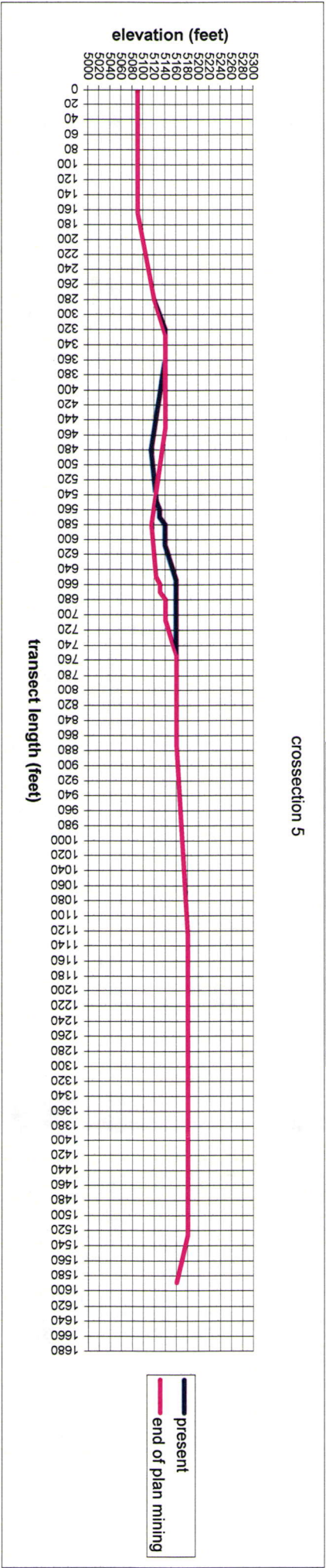


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from topo map										present		end of plan mining		reclamation sloping					
transect no 1	pt. no.	UTM North (meters)	UTM east (meters)	Y axis on graph: elevation (ft.)	distance between UTM points (meters)	cumulative distance between UTM points	X axis on graph: adjusted cumulative length of transect (converted to feet)	elevation (ft.)		length (feet)		elevation (ft.)		length (feet)					
								elevation	length	elevation	length	elevation	length						
								1	416219	4449005	5090	0	0	5090	0	5090	0		
								2	416253	4448968	5090	50	165	5090	165	5090	165		
								3	416290	4448927	5120	55	346	5120	280	5120	280		
								4	416335	4448861	5140	80	608	5140	320	5140	328		
								5	416344	4448850	5160	14	655	5140	340	5140	430		
								6	416390	4448802	5160	66	873	5140	360	5140	450		
								7	416408	4448780	5180	28	966	5115	480	5115	580		
								8	416424	4448756	5180	29	1060	5125	550	5123	650		
9	416440	4448745	5160	19	1124	5130	560	5130	660	5130	670								
														5130	570	5130	670	5135	680
														5140	580	5140	680	5140	708
														5140	608	5140	708	5160	775
														5160	655	5160	755	5160	873
														5160	873	5160	873	5180	1126
														5180	1126	5180	1126	5180	1526
														5180	1526	5180	1526	5160	1590
														5160	1590	5160	1590		



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Snow White N.O.I. For L.M.O. Appendix 2, page 11

345 Track Hoe Estimate for pulling back north edge of rock pile 105.3.(a).4 on Reclamation Treatments Map and blending in with natural elevation (also exposing original growth medium). Track hoe to pull back 1/2 of 12,939 CY of pile and stage for the dozer to push material into the trench (105.3.(a).5) and match with hill to south.

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

from Workesheet 10, page A-12, Handbook for Calculation of Reclamaiton Costs, Productivity for Hydraulic Excavator Use (Backhoe or Power Shovel).

Caterpillar 345 Track Hoe

Net Bucket Capacity = 2.4 LCY x 0.9 = 2.16 LCY

heaped bucket capacity bucket fill factor
pg. 4-16, Cat handbook see page 4-132 Cat handbook
used avg of 1.91 to 2.87 yd3 for hard, tough clay.

Hourly Production = $\frac{2.16 \text{ minutes}}{\text{net bucket capacity}} \times 60 \text{ min/hour} \times 0.75 = 130 \text{ LCY/hr}$

0.75
cycle time.
See page 4-179,
Cat handbook.

0.75
efficiency factor
page 18, Surface mining handbook

$$\text{Hours Required} = \frac{\text{6,500 volume to be handled}}{\text{130 LCY/hr net hourly production}} = 50.2 \text{ hrs}$$

D8 Dozer time estimate for pushing rock overburden from pile 105.3.(a).4 on Reclamation Treatments Map into trench 105.3.(a).5 - Rec. Treat. Map, and matching material up to original grade to the south.

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

from Worksheet 5, page A-7, Handbook for Calculation of Reclamation Costs, PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE.

CATERPILLAR D8R - SEMI U

Operating Adjustment Factor = $\frac{1}{0.75} \times \frac{1}{1} \times \frac{0.75}{0.8}$

operator factor
pg. 1-42, Cat
handbook, .75
"average", .6
"poor".

material factor
pg. 1-42 Cat
handbook.
1.2 - loose
stockpile
.8 - hard to cut
frozen w/tilt cyl.
Use .7 w/o tilt.
.6-.8 - rock,
ripped or blasted.

efficiency factor.
Use .75 "unfavorable
or night" conditions for
crawler equip., Pg.
18, Reclamation
Handbook.

grade factor.
From chart 1-42
Cat handbook.
At right

$\times \frac{1}{1} \times \frac{1}{1} \times \frac{1}{1} \times \frac{1}{1} = 0.45$

weight correction
factor

production / blade
method / blade
factor

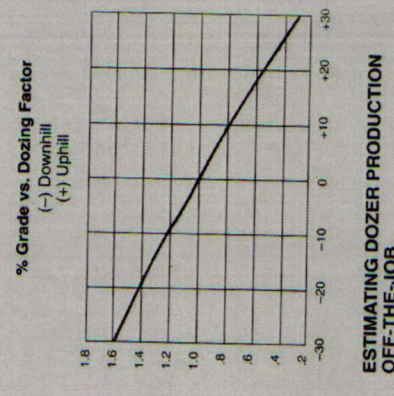
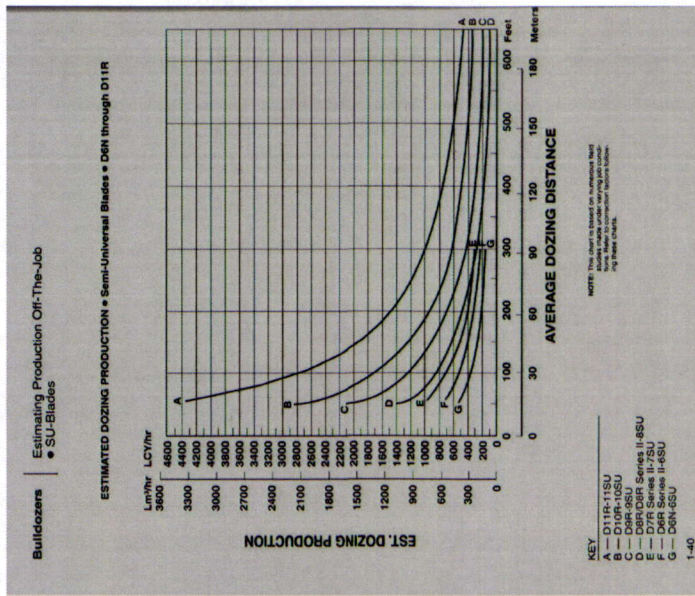
visibility factor
use .8 for dust,
rain, snow, fog,
or darkness

elevation factor

Net Hourly Production = $\frac{1,400 \text{ LCY/hr} \times 0.45}{\text{normal hourly production (pg 1-40, Cat Handbook). See right}}$ = $\frac{630 \text{ LCY/hr}}{\text{operating adjustment factor}}$

Hours Required = $\frac{8,000 \text{ LCY}}{\text{volume to be moved}} = \frac{12.7 \text{ hrs}}{\text{net hourly production}}$

$\frac{630 \text{ LCY/hr}}{\text{net hourly production}}$



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Snow White N.O.I. For L.M.O. Appendix 2, page 13

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

Caterpillar 345 Track Hoe

$$\text{Hours Required} = \frac{\text{volume to be handled}}{\text{net hourly production}} = \frac{7,920}{295 \text{ LCY/hr}} = 26.9 \text{ hrs}$$

D8 dozer time estimate for redistributing material pulled back from north edge of rock overburden from pile 105.3.(a).7 on Reclamation Treatments Map. Material will be pushed into previously mined area to south of pile

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00
from Worksheet 5, page A-7, Handbook for Calculation of Reclamation Costs, PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE.

CATERPILLAR D8R - SEMI U

$$\text{Operating Adjustment Factor} = \frac{1}{0.75} \times \frac{1}{0.9} \times \frac{1}{0.75} \times \frac{1}{1} \times \text{grade factor.}$$

operator factor pg. 1-42, Cat handbook, .75 "average", .6 "poor".

material factor pg. 1-42 Cat handbook, .75 "average", .6 "poor".

efficiency factor. Use .75 "unfavorable or night" conditions for crawler equip.. Pg. 18, Reclamation Handbook.

grade factor. From chart 1-42 Cat handbook.

At right

$$x \frac{1}{1} \times \frac{1}{1} \times \frac{1}{1} \times \frac{1}{1} \times \frac{1}{1} \times \frac{1}{1} = 0.50625$$

weight correction factor

production method / blade factor

visibility factor use .8 for dust, rain, snow, fog, or darkness

elevation factor

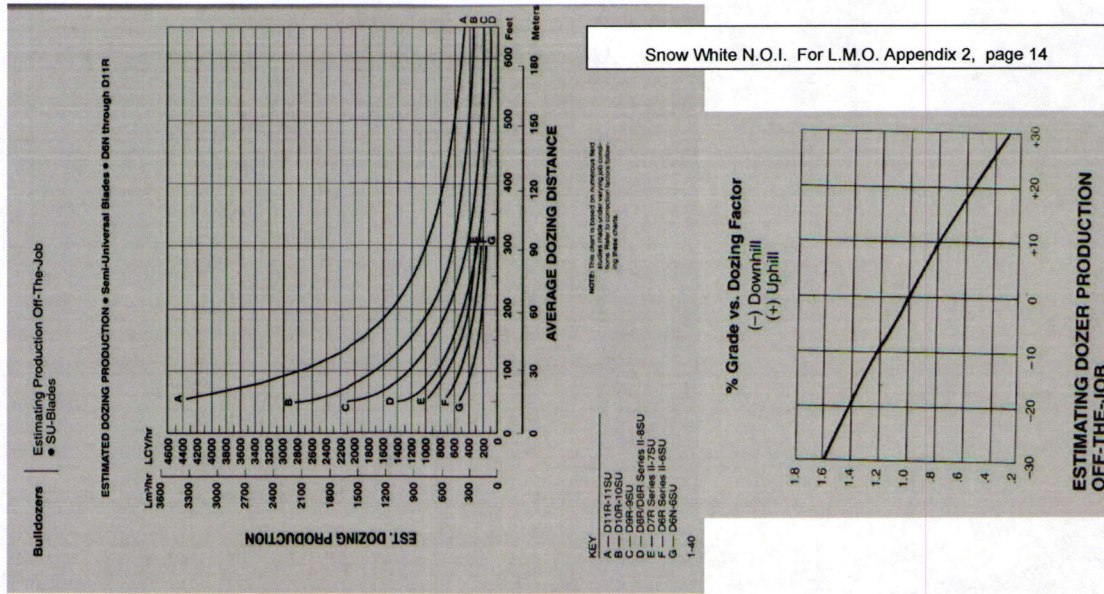
$$\text{Net Hourly Production} = \frac{600 \text{ LCY/hr} \times 0.50625}{\text{operating adjustment factor}} = 303.75 \text{ LCY/hr}$$

normal hourly production (pg 1-40, Cat Handbook). See right

$$\text{Hours Required} = \frac{4,000 \text{ LCY}}{304 \text{ LCY/hr}} = 13.2 \text{ hrs}$$

volume to be moved

net hourly production



Snow White N.O.I. For L.M.O. Appendix 2, page 14

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Snow White N.O.I. For L.M.O. Appendix 2, page 15

D8 dozer time estimate for grading rock overburden pile 105.3.(a).8 on Reclamation Treatments Map to less than 3H:1V. Estimate pushing 50% of the 4,274 CY in pile.

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00
from Worksheet 5, page A-7, Handbook for Calculation of Reclamation Costs, PRODUCTIVITY AND HOURS REQUIREMENTS, USE.

CATERPILLAR D8R - SEMI U

Operating Adjustment Factor =	0.75	0.9	0.75	1.5
operator factor pg. 1-42, Cat handbook, 75 "average", 6 "poor".	x	x	x	x
material factor pg. 1-42 Cat handbook.				
efficiency factor. Use .75 "unfavorable or night" conditions for crawler equip. Pg. 18. Reclamation stockpile				
grade factor. From chart 1- Cat handbook At right				

operator factor pg. 1-42, Cat handbook, 75 "average", 6 "poor".	material factor pg. 1-42 Cat handbook, 75 1.2 - loose stockpile	efficiency factor. Use .75 "unfavorable or night" conditions for crawler equip.. Pg. 18, Reclamation Handbook.	grade factor. From chart 1- Cat handbook At right
---	---	---	--

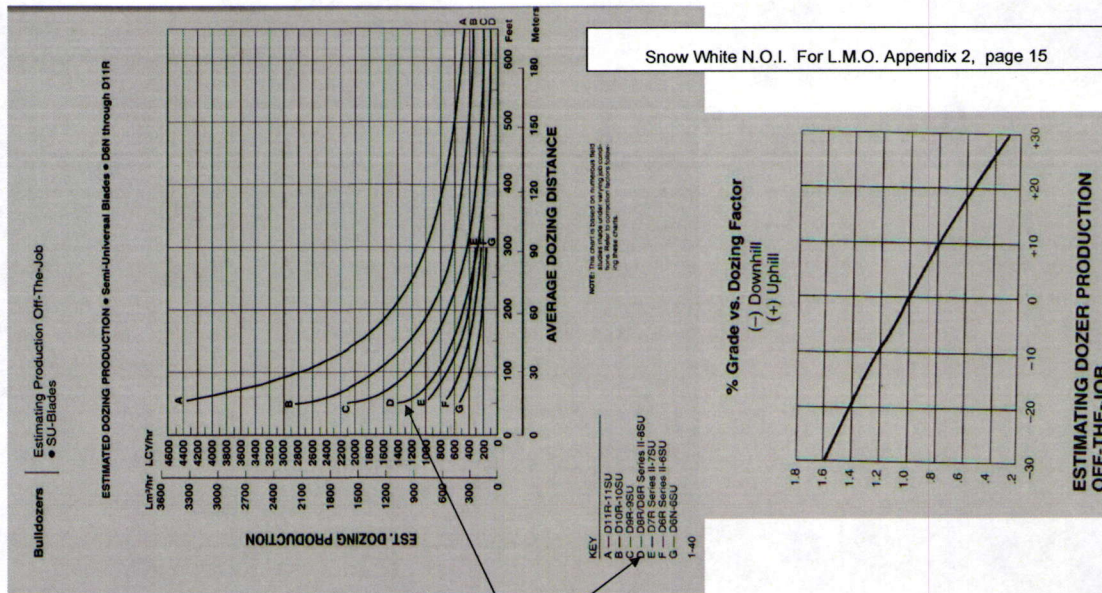
x	<input type="text" value="1"/>	x	<input type="text" value="1"/>	x	<input type="text" value="1"/>	=	<input type="text" value="1"/>	=	0.759375
	weight correction factor		production method / blade factor		visibility factor		elevation factor		
					use 8 for dust, rain, snow, fog, or darkness				

visibility factor use .8 for dust, rain, snow, fog, or darkness	elevation factor

Net Hourly Production = $\frac{1,200 \text{ LCV/hr} \times 0.759375}{\text{operating adjustment factor}}$ = 911.25 LCV/hr

normal hourly production (pg 140, Cat Handbook).
See right

$$\text{Hours Required} = \frac{\text{2,137 LCY volume to be moved}}{\text{911 LCY/hr net hourly production}} = 2.3 \text{ hrs}$$



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Snow White N.O.I. For L.M.O. Appendix 2, page 16

D8 dozer time for grading redistributed rock overburden from pile 105.3(a). 9 on Reclamation Treatments Map to less than 3H:1V. Material to be pushed into previously mined area to the north and east of pile. Estimate pushing down hill 50% or 13,197CY, of the 26,394 CY in pile.

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00
from Worksheet 5, page A-7, Handbook for Calculation of Reclamation Costs, PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE.

CATERPILLAR D8R - SEMI U

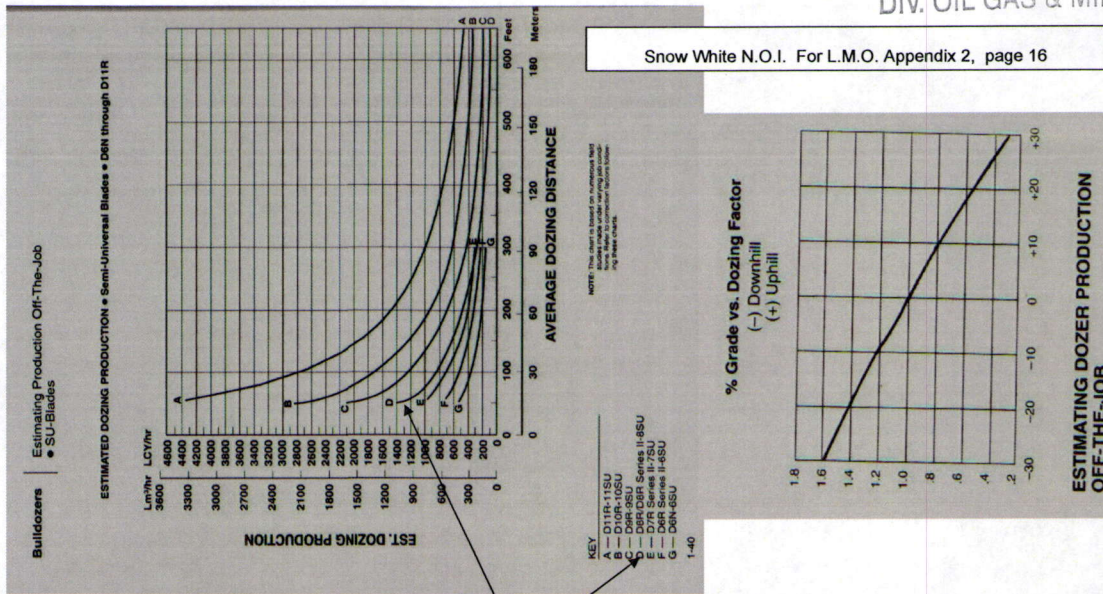
Operating Adjustment Factor =	<div><div></div><div>0.75</div><div></div></div>	x	<div><div></div><div>0.9</div><div></div></div>	x	<div><div></div><div>0.75</div><div></div></div>	x	<div><div></div><div>1.5</div><div></div></div>
operator factor pg. 1-42, Cat handbook, 75 "average", 6 "poor".			material factor pg. 1-42 Cat handbook. 1.2 - loose stockpile 8 - hard to cut		efficiency factor. Use .75 "unfavorable or night" conditions for crawler equip.. Pg. 18, Reclamation Handbook.		grade factor. From chart 1-42 Cat handbook. At right

.8 - hard to cut
frozen w/tilt cyl.
Use .7 w/o tilt.
.6-.8 - rock,
ripped or blasted.

x	<input type="text" value="1"/>	x	<input type="text" value="1"/>	x	<input type="text" value="1"/>	=	<input type="text" value="0.759375"/>
	weight correction factor		production method / blade factor		visibility factor use .8 for dust, rain, snow, fog, or darkness		elevation factor

Net Hourly Production = $\frac{800 \text{ LCV/hr} \times 0.759375}{\text{operating adjustment factor}}$ = 607.5 LCV/hr

$$\frac{\text{Hours Required} = \frac{13,197 \text{ LCY}}{608 \text{ LCY/hr}}}{\text{volume to be moved}} = \frac{21.7 \text{ hrs}}{\text{net hourly production}}$$



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Growth Media Requirements:

Snow White N.O.I. For L.M.O. Appendix 2, page 17

Acres to be reclaimed		map references
area presently disturbed and from prior mining	20.9	
area of future mining	7.1	
area reclaimed in 2005	-1	
Total	27	
Bio-Solids required		
area presently disturbed by prior mining	20.9	
tons bio-solids required at 10 tons/acre:	209	
est. 6 trucks @		

D8 dozer time for ripping 3,100 feet of temporary mining roads, using a D8R dozer, with 8' ripper spacing.

Snow White N.O.I. For L.M.O. Appendix 2, page 18

Volume of material to be ripped: 3100 ft x 20 ft. wide 2 ft (rip dept) / 27 ft³/CY : 4,593 CY
 average cut length: 3100 ft / 5 road segments = 620 ft/segment

References for this sheet: Caterpillar Performance Handbook, Edition 33,
 Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining,
 4/5/00, Worksheet 7, Productivity and Hours Required for Ripper-Equipped Dozer Use.

cycle time = $\frac{620 \text{ ft}}{\text{cut length}} \div 88 \text{ ft/min} \div 0.3 \text{ min} = 7.6 \text{ minutes per pass}$
 fixed turn time
 Passes/Hour = $60 \text{ min/hr} \div \frac{7.6 \text{ min/pass}}{\text{cycle time}} \div 0.83 \text{ efficiency factor} = 9.5 \text{ passes / hour}$
 Volume Cut/Pass = $2 \text{ ft tool penetration} \times 8 \text{ ft cut spacing} \times \frac{620 \text{ ft}}{\text{cut length}} \div 27 \text{ ft}^3/\text{yd}^3 = 367 \text{ BCY / pass}$
 Hourly Production = $367 \text{ BCY / Pass} \times 9.5 \text{ passes/hr.} = 3,506 \text{ BCY / hr}$
 Hours Required = $\frac{4,593 \text{ BCY}}{\text{bank volume to be ripped}} \div \frac{3,506 \text{ BCY / hr}}{\text{hourly production}} = 1 \text{ hr}$

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D8 dozer time for ripping 20.9 acre area that is presently disturbed from prior mining, using a D8R dozer, with 8' ripper spacing.

Snow White N.O.I. For L.M.O. Appendix 2, page 19

Volume of material to be ripped: 20.9 acres x 43,560 ft²/acre x 2 ft = 1,820,808 / 27 ft³/CY = 67,437 CY

References for this sheet: Caterpillar Performance Handbook, Edition 33, Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00, Worksheet 7, Productivity and Hours Required for Ripper-Equipped Dozer Use.

cycle time = $\frac{200 \text{ ft / cut length}}{88 \text{ ft/min}} + \frac{0.3 \text{ min}}{\text{fixed turn time}} = 7.6 \text{ minutes per pass}$

Passes/Hour = $60 \text{ min/hr} \div \frac{7.6 \text{ min/pass}}{\text{cycle time}} \div \frac{0.83}{\text{efficiency factor}} = 9.5 \text{ passes / hour}$

Volume Cut/Pass = $\frac{2 \text{ ft}}{\text{tool penetration}} \times \frac{8 \text{ ft}}{\text{cut spacing}} \times \frac{200 \text{ ft}}{\text{cut length}} \div 27 \text{ ft}^3/\text{yd}^3 = 119 \text{ BCY / pass}$

Hourly Production = $119 \text{ BCY / Pass} \times 9.5 \text{ passes/hr.} = 1,131 \text{ BCY / hr}$

Hours Required = $\frac{67,437 \text{ BCY}}{\text{bank volume to be ripped}} \div \frac{1,131 \text{ BCY / hr}}{\text{hourly production}} = 60 \text{ hr}$

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980 Loader time estimate for spreading biosolids over the 20 acres of area 105.3.(a).14 on Reclamation Treatments Map.

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00
from Worksheet 8, page A-10, Handbook for Calculation of Reclamation Costs, Productivity for Loader Use.

Caterpillar 980G Loader

Cycle Time = $\frac{0.25}{\text{min}}$ + $\frac{0.3}{\text{min}}$ + $\frac{1.2}{\text{min}}$ = 1.7 min
 haul time loaded
 pg 12-105, Cat handbook
 see graph at right
 return time empty
 pg. 12-125 Cat handbook
 see page 12-106 Cat handbook for a 7.5 CY bucket 750 CY/hr
 see graph at right
 100 cycles/hr. + additional estimated
 time to spread material.

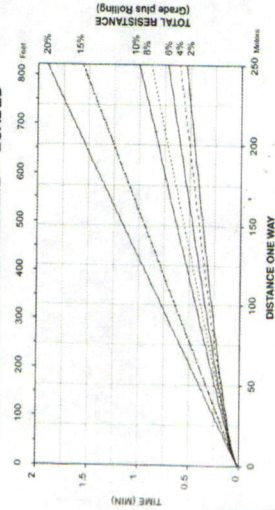
Net Bucket Capacity = $\frac{7.5}{\text{LCY}} \times \frac{1}{\text{bucket fill factor}}$ = 7.5 LCY
 heaped bucket capacity
 page 12-52, Cat
 Handbook, Rated bucket
 cap 7.5, struck 6.44
 100 - 120% for rock
 dirt mixtures

Hourly Production = $\frac{7.5}{\text{LCY}} \times \frac{1.7}{\text{cycle time}} \times \frac{60}{\text{min/hr}} \times \frac{0.5}{\text{efficiency factor}}$ = 132 LCY/hr
 net bucket capacity
 cycle time
 see page 18, Surface mining handbook

Hours Required = $\frac{6.986}{\text{volume to be moved}} = \frac{132}{\text{hourly production}} = 52.8 \text{ hrs.}$

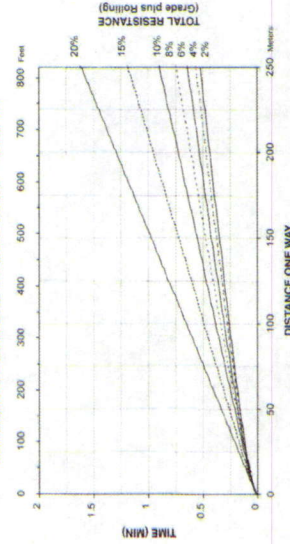
Travel Time — Loaded
 • 980G/980G Series II
 • 29.5R25 Tires

980G/980G SERIES II TRAVEL TIME — LOADED



Wheel Loaders
 Integrated Toolcarriers
 Travel Time — Empty
 • 980G/980G Series II
 • 29.5R25 Tires

980G/980G SERIES II TRAVEL TIME — EMPTY

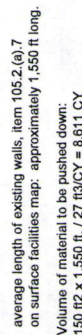


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Snow White N.O.I. For L.M.O. Appendix 2, page 21

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

from Worksheet 5, page A-7, Handbook for Calculation of Reclamation Costs, PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE:

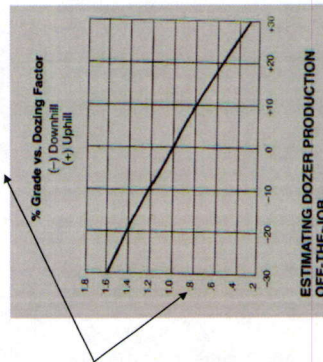


Snow White N.O.I. For L.M.O. Appendix 2, page 21

x	<input type="text" value="1"/>	x	<input type="text" value="1"/>	x	<input type="text" value="1"/>	x	<input type="text" value="1"/>	=	<input type="text" value="0.50623"/>
	weight correction factor		production method / blade factor		visibility factor		elevation factor		

Hours Required = $\frac{8,611 \text{ LCY}}{\text{volume to be moved}}$ = 28.3 hrs

304 LCY/hr
net hourly production



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C769 Dump Truck Time Estimate

For hauling rock from pile 105.3(a)7 on Reclamation Treatments Map to area south of pile to be redistributed over area previously mined.

Snow White N.O.I. For L.M.O. Appendix 2, page 22

from Worksheet 9, page A-11, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Truck Use. this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

Caterpillar 769C Dump Truck

No. Loader Passes / Truck = Loose Cubic Yards, LCY = passes (rounded to nearest whole number)

Truck Capacity Loose Cubic Yards, LCY

Loader bucket capacity (see worksheet 10) LCY x Loader passes per truck = LCY

Net Truck Capacity = LCY x Loader passes per truck = LCY

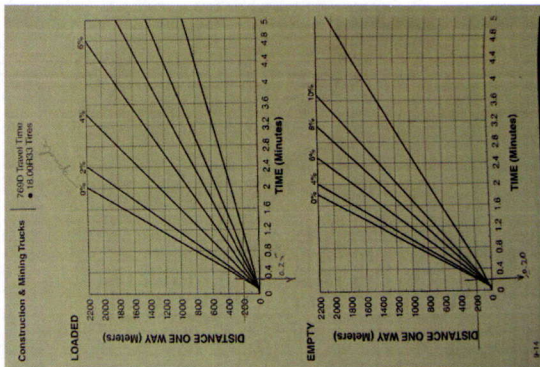
Loading Time/Truck = minutes x Loader passes per truck = minutes

Truck Cycle Time = minutes + minutes + minutes = minutes

Production Rate = LCY x no. trucks = LCY / minute

Hourly Production = LCY / minute x min/hr. x efficiency factor = LCY / hour

Hours Required = LCY / hour x hours = hours



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Snow White N.O.I. For L.M.O. Appendix 2, page 23

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hourly machine costs:

Cat 345 track hoe	\$282
Cat D8 Dozer	\$248
Cat 890 Loader	\$244

For detail
reference

page below	Task	Time (hrs)	Cost per hour	no of units	Cost
11	345 Track Hoe Estimate for pulling back north edge of rock pile 105.3.(a).4 on Reclamation Treatments Map and blending in with natural elevation (also exposing original growth medium). Track hoe to pull back 1/2 of 12,939 CY of pile and stage for the dozer to push material into the trench (105.3.(a).5) and match with hill to south.	22.1	\$282	1	\$6,232
12	D8 Dozer time estimate for pushing rock overburden from pile 105.3.(a).4 on Reclamation Treatments Map into trench 105.3.(a).5 - Rec. Treat. Map, and matching material up to original grade to the south.	12.7	\$248	1	\$3,150
13	345 track hoe time estimate for pulling back north edge of rock pile 105.3.(a).7 on Reclamation Treatments Map and restoring ephemeral stream bed. Track hoe to pull back 1/3 of 10,560 CY of pile and load dump truck to haul to be redistributed over previously mined area.	26.9	\$282	1	\$7,586
14	D8 dozer time estimate for redistributing material pulled back from north edge of rock overburden from pile 105.3.(a).7 on Reclamation Treatments Map. Material will be pushed into previously mined area to south of pile	13.2	\$248	1	\$3,274
15	D8 dozer time estimate for grading rock overburden pile 105.3.(a).8 on Reclamation Treatments Map to less than 3H:1V. Estimate pushing down hill 50%, or 5,287CY, of the 4,274 CY in pile to the south of pile.	2.3	\$248	1	\$570
16	D8 dozer time for grading redistributed rock overburden from pile 105.3.(a).9 on Reclamation Treatments Map to less than 3H:1V. Material to be pushed into previously mined area to the north and east of pile. Estimate pushing down hill 20%, or 5,287CY, of the 26,394 CY in pile.	21.7	\$248	1	\$5,382
18	D8 dozer time for ripping 3,100 feet of temporary mining roads, using a D8R dozer, with 3 rippers.	1	\$248	1	\$248
19	D8 dozer time for ripping 20.9 acre area that is presently disturbed from prior mining, using a D8R dozer, with 8' ripper spacing.	60	\$248	1	\$14,880
20	980 Loader time estimate for spreading biosolids over 20 acres of area 105.3.(a).14 on Reclamation Treatments Map.	52.8	\$244	1	\$12,883
21	D8 dozer time for sloping walls <3H:1V at end of mining.	28	\$248	1	\$6,944
22	C769 Dump Truck Time Estimate for hauling rock from pile 105.3.(a).7 on Reclamation Treatments Map to area south of pile to be redistributed over area previously mined.	11	\$248	1	\$2,728

17 Growth Media Requirements:

biosolid spreading, & seeding cost estimate: based on \$300 per acre, 10 tons per acre biosolids, and a seeding cost of \$280 per acre - total: \$580 per acre. Apply to 20 acres.	\$11,600
Plugging drill holes not consumed by mining (item 105.2.(c) on Surface Facilities Map	\$3,000
General site clean up and removal of trash and debris	\$2,000
Equipment mobilization. 1 D8 Dozer, 1 rock truck, 1 track hoe, 1 980 loader @ \$2,000 / unit,	\$8,000
Supervision of reclamation (10% of total reclamation costs)	\$7,100

Subtotal \$95,576

Contingency (10% of total subtotal above) \$9,557.64

5 year Escalation

1	\$95,576	1.60%	\$1,529
2	\$97,106	1.60%	\$1,554
3	\$98,659	1.60%	\$1,579
4	\$100,238	1.60%	\$1,604
5	\$101,842	1.60%	\$1,629

\$7,895

* there is no line item cost for bio-solids because Interstate has been told this material can be delivered free of charge.

Total Reclamation Cost Estimate: \$113,029

Reclamation cost of 1 campaign of mining (see appendix 3)

\$42,763

Total reclamation cost estimate

\$155,792



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8160 South Highland Drive • Sandy, Utah 84093 [P] 801.943.4144 [F] 801.942.1852

Date: March 4, 2005

To: John Hewitt
Interstate Brick, Inc.
9780 South 5200 West
West Jordan, UT 84088-5625

From: William W. Fuller

Subject: Depth to Groundwater Information for the Snow White Mine

The Depth to groundwater value of 175 feet was extracted from the Utah Division of Water Rights website. This information would be located in section 106.8 of the NOI. The data base indicated the closest well to the Snow White mine is S50 E660 N4 Section 19 T7S R1W. The drill log for that particular well indicated a depth to groundwater of approximately 175 feet. The well identification in the data base had two designations: t18749 and a18435. Please feel free to call with any questions or comments.



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8160 South Highland Drive • Sandy, Utah 84093 [P] 801.943.4144 [F] 801.942.1852

Date: March 4, 2005

To: John Hewitt
Interstate Brick, Inc.
9780 South 5200 West
West Jordan, UT 84088-5625

From: Eric A. Holt

Subject: Wildlife and Threatened and Endangered Species Survey

On 02 March 2005 I visited Interstate Brick's Snow White Mine in Utah County, Utah (UTM Zone 12 416385E X 4448865N). The mine site lies on the western slopes of the southern end of the Utah Lake Mountains at approximately 6,000 feet elevation. The site occurs within a transition zone between the higher elevation juniper (*Junipersus* sp.) and lower elevation sagebrush (*Artemesia* sp.). Utah Lake is located approximately 3.5 miles to the east and the site does not contain any live streams, ponds, wetlands, or riparian areas. The site is highly disturbed from previous above ground mining, illegal dumping, target practice, and off-road-vehicle activity.

Given the elevation and vegetation type, the areas around the mine, and the mine site itself before surface disturbance, provide winter habitat for mule deer. While in transit to the site, four mule deer were observed approximately 2 miles east along the well-established access road leading to the mine. Concerning other wildlife, mine operations have not impacted any riparian areas and have thus had no impact of fishes or reptiles. Approximately 17 acres of upland habitat has been temporarily removed and is likely unused by most bird, reptile, and mammal species. Large expanses of identical and undisturbed habitat is available immediately adjacent to the mine site.

Concerning species listed by the US Fish and Wildlife Service as Threatened or Endangered, nine species are identified as historically or potentially occurring in Utah County: clay phacelia (*Phacelia argillacea* - Endangered), deseret milkvetch (*Astragalus desereticus* - Threatened), Ute ladies'-tresses (*Spiranthes diluvialis* - Threatened), Utah valvata snail (*Valvata utahensis* - Endangered), June sucker (*Chasmistes liorus* - Endangered), bald eagle (*Haliaeetus leucocephalus* - Threatened), western yellow-billed cuckoo (*Coccyzus americanus occidentalis* - Candidate), Canada lynx (*Lynx Canadensis* - Threatened), and grizzly bear (*Ursus arctos* - Threatened).

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Clay phacelia grows on barren, precipitous hillsides in sparse pinyon-juniper and mountain brush communities in Spanish Fork Canyon; the species is not found in or near the mine site. **Deseret milkvetch** grows in an open pinyon-juniper-sagebrush community at a single location located away from the mine site. The **Utah valvata snail** occurred historically in Utah Lake, but is now considered extirpated. **Ute ladies'-tresses** grows in sandy or loamy soils and is endemic to moist soils in mesic or wet meadows near springs, lakes, or perennial streams; these habitats do not exist in or adjacent to the mine site. The preferred habitat of the **Canada lynx** is montane coniferous forest; the mine site does not provide habitat for this species. The **grizzly bear** was extirpated from Utah in the 1920s. The **June sucker** is a lake sucker endemic to Utah Lake; mine operations have had no impact on Utah Lake. In Utah, **yellow-billed cuckoo** habitat typically consists of large blocks of riparian habitat (approximately >50 acres) that includes mature cottonwood trees below an elevation of 6,000 feet; the mine site does not provide suitable habitat for this species. **Bald eagles** are not expected to occur in the area except as occasional visitors. The most common use of the area by bald eagles would occur in winter, as migrant eagles would potentially use the area for hunting and feeding opportunities. Only four bald eagle nest sites are known in Utah. None of these nest sites are located within or near the mine site. Marginal foraging habitat is available around the mine site; however, it is unlikely that this species would be found there on a regular basis. Mine activities have/would have **No Effect** on any Threatened or Endangered species.

Appendix 3, Soils Tests And Analysis

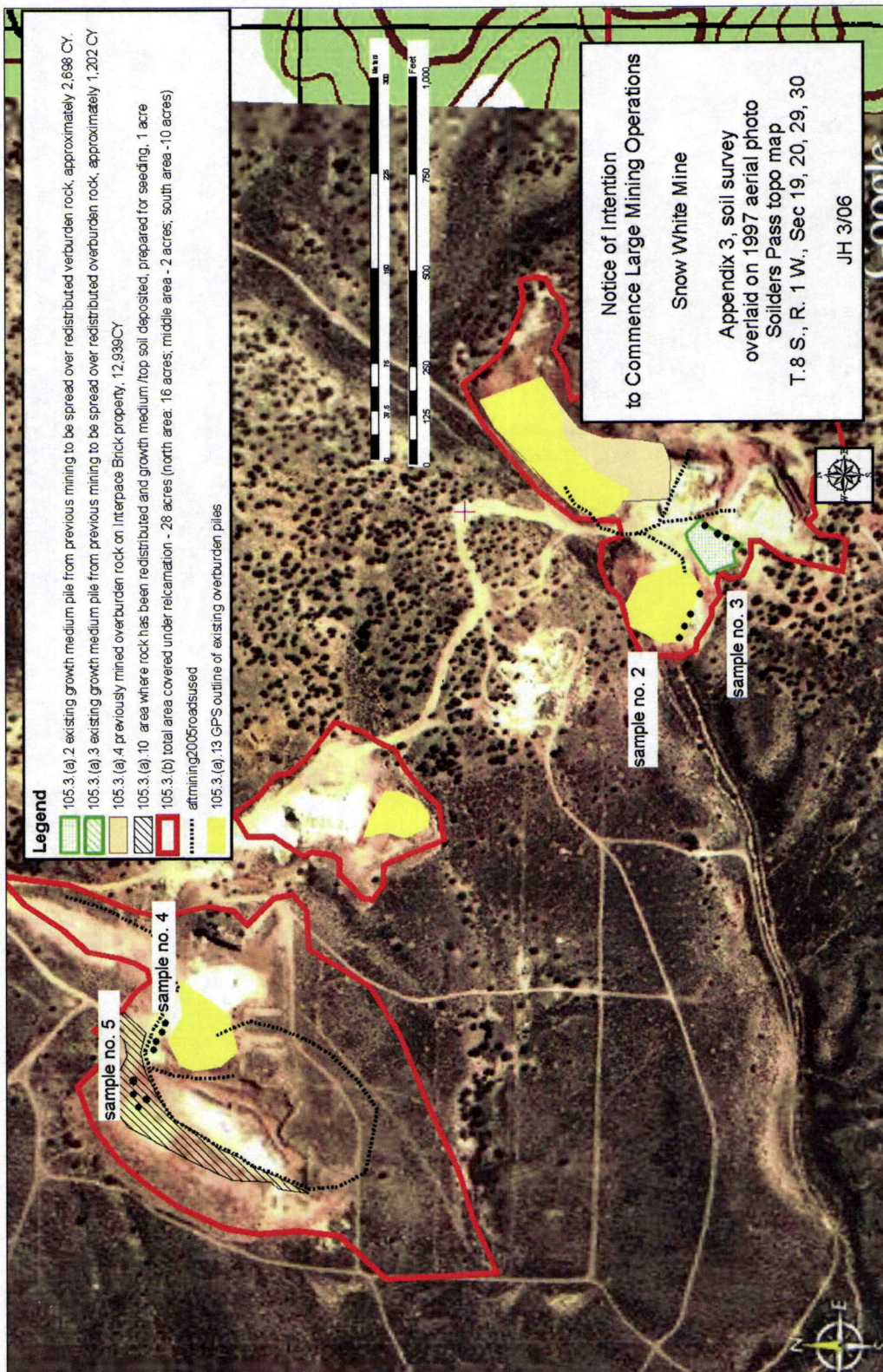
Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County

Page 1 of 5

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Appendix 3, Soils Tests And Analysis

Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County

Page 2 of 5

Sample no. 2. Composite sample taken from the west side overburden rock pile
designated
105.3.(a).7 on Reclamation Treatments Map

Soil Test Report And

Fertilizer

USU Analytical Labs

Utah State University

Logan, Utah 84322-4830

(435) 797-

(435) 797-2117 (FAX)

www.usual.usu.edu

Date 2/15/2006

Date 3/6/2006

Name: INTERSTATE BRICK CO

Address: 9780 S 5200 W

ATTN FRANKIE

WEST JORDAN UT 84088-5625

Phone: 801-301-6729

County: SALT LAKE

Lab Number: 6010196

Grower's

Acres in

Identification: 2

Crop to be Grown:

Soil Test	Interpretations	Recommendations
Texture	Sandy Clay	
pH	8.0	Normal
Salinity - ECe	0.9	
Phosphorus - P mg/kg	3.3	
Potassium - K	107	
Nitrate-Nitrogen - N mg/kg		
Zinc - Zn		
Iron - Fe mg/kg		
Copper - Cu		
Manganese - Mn		
Sulfate-Sulfur - S		
Organic Matter	0.9	
SAR	5.66	Soil Not Sodic

Notes:

SAND: 47%

SILT: 19%

CLAY: 34%

TOTAL N = 0.05%

CATION EXCHANGE CAPACITY (CEC) = 20.9 meq/100g

For further assistance, please see your County Agent

For further information and publications of interest, see

USU Analytical Lab webpage or Utah State University Extension

Appendix 3, Soils Tests And Analysis

Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County
Page 3 of 5

Sample no. 3. Composite sample taken from the south side of top soil pile designated
105.3.(a).2 on Reclamation Treatments Map

Soil Test Report And

Fertilizer

USU Analytical Labs

Utah State University
Logan, Utah 84322-4830
(435) 797-
(435) 797-2117 (FAX)
www.usual.usu.edu

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DIV. OIL GAS & MINING

Date: 2/15/2006
Date: 3/6/2006
Name: INTERSTATE BRICK CO
Address: 9780 S 5200 W
ATTN FRANKIE
WEST JORDAN UT 84088-5625

Phone: 801-301-6729
County: SALT LAKE

Lab Number: 6010197

Grower's

Acres in

Identification: 3

Crop to be Grown:

Soil Test	Interpretations	Recommendations
Texture	Sandy Clay	
pH	7.6	Normal
Salinity - ECe	3.02	
Phosphorus - P mg/kg	4.1	
Potassium - K	297	
Nitrate-Nitrogen - N mg/kg		
Zinc - Zn		
Iron - Fe mg/kg		
Copper - Cu		
Manganese - Mn		
Sulfate-Sulfur - S		
Organic Matter	3.2	
SAR	4.40	Soil Not Sodic

Notes:

SAND: 45%

SILT: 25%

CLAY: 30%

TOTAL N = 0.12%

CATION EXCHANGE CAPACITY (CEC) = 16.4 meq/100g

For further assistance, please see your County Agent

For further information and publications of interest, see

[USU Analytical Lab webpage](#) or [Utah State University Extension](#)

Appendix 3, Soils Tests And Analysis

Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County

Page 4 of 5

Sample no. 4 Composite sample of the mine floor taken approximately 20 ft to the north west of the rock overburden pile designated 105.3.(a).9 on Reclamation Treatments Map

Soil Test Report And

Fertilizer

USU Analytical Labs

Utah State University

Logan, Utah 84322-4830

(435) 797-

(435) 797-2117 (FAX)

www.usual.usu.edu

Date 2/15/2006

Date 3/6/2006

Name: INTERSTATE BRICK CO

Address: 9780 S 5200 W

ATTN FRANKIE

WEST JORDAN UT 84088-5625

Phone: 801-301-6729

County: SALT LAKE

Lab Number: 6010198

Grower's

Acres in

Identification: 4

Crop to be Grown:

Soil Test	Interpretations	Recommendations
Texture	Clay Loam	
pH	7.7	Normal
Salinity - ECe	8.26	
Phosphorus - P mg/kg	7.2	
Potassium - K	89	
Nitrate-Nitrogen - N mg/kg		
Zinc - Zn		
Iron - Fe mg/kg		
Copper - Cu		
Manganese - Mn		
Sulfate-Sulfur - S		
Organic Matter	0.7	
SAR	13.4	Soil Not Sodic

Notes:

SAND: 43%

SILT: 20%

CLAY: 37%

TOTAL N = 0.04%

CATION EXCHANGE CAPACITY (CEC) = 11.3 meq/100g

For further assistance, please see your County Agent

For further information and publications of interest, see

USU Analytical Lab webpage or Utah State University Extension

Appendix 3, Soils Tests And Analysis

Notice of Intention to Commence Large Mining Operations, Snow White Mine,
T. 7 S., R. 1 W., SW1/4 Sec. 20 & NW1/4 Sec. 29, Utah County
Page 5 of 5

Sample no. 5. Composite sample of redistributed top soil that was placed on top of rocky overburden spread over the mine floor from previous mining. Taken from the 1 acre area labeled 105.3.(a).10 on Reclamation Treatments Map.

Soil Test Report And Fertilizer

USU Analytical Labs
Utah State University
Logan, Utah 84322-4830
(435) 797-
(435) 797-2117 (FAX)
www.usual.usu.edu

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Date 2/15/2006
Date 3/6/2006
Name: INTERSTATE BRICK CO
Address: 9780 S 5200 W
ATTN FRANKIE
WEST JORDAN UT 84088-5625

Phone: 801-301-6729
County: SALT LAKE

Lab Number: 6010199

Grower's

Acres in

Identification: 5

Crop to be Grown:

Soil Test	Interpretations	Recommendations
Texture	Sandy Clay	
pH	7.6	Normal
Salinity - ECe	0.6	
Phosphorus - P mg/kg	59	
Potassium - K	128	
Nitrate-Nitrogen - N mg/kg		
Zinc - Zn		
Iron - Fe mg/kg		
Copper - Cu		
Manganese - Mn		
Sulfate-Sulfur - S		
Organic Matter	3.0	
SAR	0.88	Soil Not Sodic

Notes:

SAND: 60%

SILT: 24%

CLAY: 16%

TOTAL N = 0.07%

CATION EXCHANGE CAPACITY (CEC) = 6.7 meq/100g

For further assistance, please see your County Agent

For further information and publications of interest, see

[USU Analytical Lab webpage](#) or [Utah State University Extension](#)



Interstate® Brick

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**Notice of Intention to Commence Large
Mining Operations
Snow White**

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Appendix 4

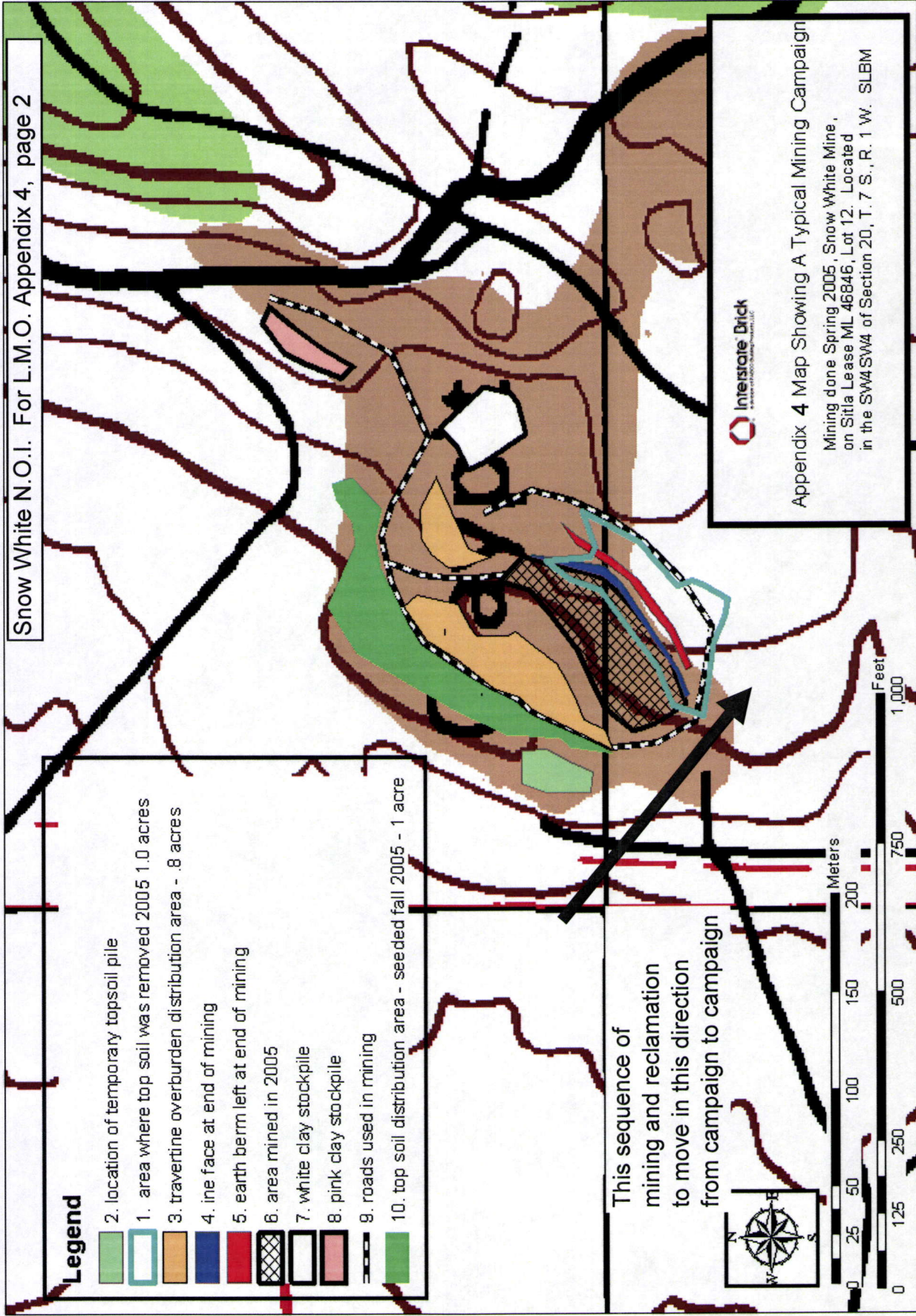
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**Reclamation Cost Estimate of a typical
mining campaign**

table of contents

page

2	Map of a typical mining campaign
3	Track Hoe Estimate for removing top soil overburden and placing in temporary overburden pile.
4	Dump truck time time for making temporary top soil overburedn pile
5	Track Hoe time for removing and redistributing sub-topsoil overburden.
6	Dump truck time for removing and redistributing sub-topsoil overburden
7	Loader time for spreading sub-top soil overburden.
8	Track hoe time for loading dump truck with temp. topsoil overburden from temp. top soil pile
9	Dump truck time for redistributing top soil.
10	loader time for spreading top soil.
11	Cost Summary



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345 track hoe time estimate for removing overburden and making temporary top soil pile.

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

from Worksheet 10, page A-12, Handbook for Calculation of Reclamation Costs, Productivity for Hydraulic Excavator Use (Backhoe or Power Shovel).

Caterpillar 345 Track Hoe

volume of material to move: (1 acre (item 1 on map) x 45,500 ft²/acre x 1.6 ft) / 27 ft³/CY =

$$\text{Net Bucket Capacity} = \boxed{2.4} \text{ LCY} \times \boxed{0.9} = \boxed{2.16} \text{ LCY}$$

heaped bucket capacity
pg. 4-16, Cat handbook
used avg of 1.91 to 2.87 yd³

bucket fill factor
see page 4-132 Cat handbook
for hard, tough clay.

$$\text{Hourly Production} = \frac{\boxed{2.16} \text{ minutes}}{\text{net bucket capacity}} \times 60 \text{ min/hour} \times \frac{\boxed{0.75}}{\text{efficiency factor}} = 295 \text{ LCY/hr}$$

$\boxed{0.33}$
cycle time.
See page 4-179,
Cat handbook.

page 18, Surface mining handbook

$$\text{Hours Required} = \frac{\boxed{1,880} \text{ volume to be handled}}{\boxed{295} \text{ LCY/hr net hourly production}} = 6.4 \text{ hrs}$$

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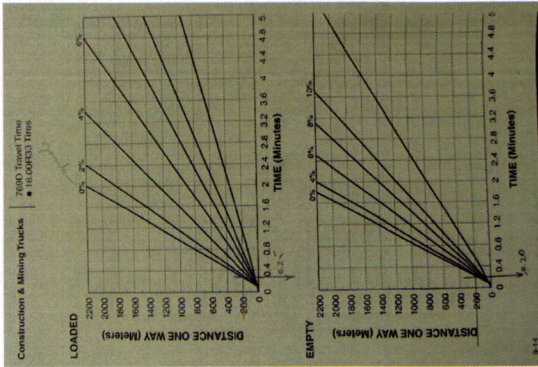
Dump Truck Time Estimate

For hauling top soil to temp. stock pile. 1,880 CY, avg. dist 500 ft.

from Worksheet 9, page A-11, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Truck Use.
this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of
Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

Caterpillar 769C Dump Truck

No. Loader Passes / Truck = 25.1 Loose Cubic Yards, LCY = 28.6 yd³ heaped, 25.1 avg.
 Loader bucket capacity (see worksheet 10) 2.16 LCY 12 passes (rounded to nearest whole number)
 Net Truck Capacity = 2.16 LCY x 12 = 25.1 LCY
 Loading Time/Truck = 0.33 minutes x 12 = 3.83 minutes
 Loader cycle time (see worksheet 10, productivity for hydraulic excavator (Cat 450))
 Truck Cycle Time = 0.4 minutes + 0.4 minutes + 2 minutes = 6.63 minutes
 Haul time see pg. 9-14 Cat handbook, distance vs. time vs. grade graph for this truck
 Production Rate = 25.1 LCY x 1 no. trucks = 3.78 LCY / minute
 Net truck capacity 6.63
 Truck Cycle time
 Hourly Production = 3.78 LCY / minute x 60 min/hr. x 0.75 efficiency factor = 170 LCY / hour
 Volume of material to be moved 1,880 LCY
 Hours Required = 170 LCY/hr = 11 hours
 Hourly Production



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345 track hoe time estimate for removing sub-topsoil overburden.

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

from Worksheet 10, page A-12, Handbook for Calculation of Reclamation Costs, Productivity for Hydraulic Excavator Use (Backhoe or Power Shovel).

Caterpillar 345 Track Hoe

volume of material to move: (.8 acre (item 1 on map) x 45,500 ft²/acre x 10ft) / 27 ft³/CY = 16,111 CY CY

$$\text{Net Bucket Capacity} = \boxed{2.4} \text{ LCY} \times \boxed{0.9} = \boxed{2.16} \text{ LCY}$$

heaped bucket capacity
pg. 4-16, Cat handbook
used avg of 1.91 to 2.87 yd³

bucket fill factor
see page 4-132 Cat handbook
for hard, tough clay.

$$\text{Hourly Production} = \frac{\boxed{2.16} \text{ minutes}}{\text{net bucket capacity}} \times 60 \text{ min/hour} \times \frac{\boxed{0.75}}{\text{efficiency factor}} = 295 \text{ LCY/hr}$$

$\boxed{0.33}$
cycle time.
See page 4-179,
Cat handbook.

page 18, Surface mining handbook

$$\text{Hours Required} = \frac{\boxed{16,111} \text{ volume to be handled}}{\boxed{295} \text{ LCY/hr net hourly production}} = 54.7 \text{ hrs}$$

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Dump Truck Time Estimate

For hauling rock overburden to be redistributed. 16,111 CY, avg. dist 600 ft.

from Worksheet 9, page A-11, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Truck Use, this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

Caterpillar 769C Dump Truck

No. Loader Passes / Truck = 25.1 Loose Cubic Yards, LCY = 12 passes (rounded to nearest whole number)

Loader bucket capacity (see worksheet 10) 2.16 LCY x 12 Loader passes per truck = 25.1 LCY

Net Truck Capacity = 2.16 LCY x 12 Loader passes per truck = 25.1 LCY

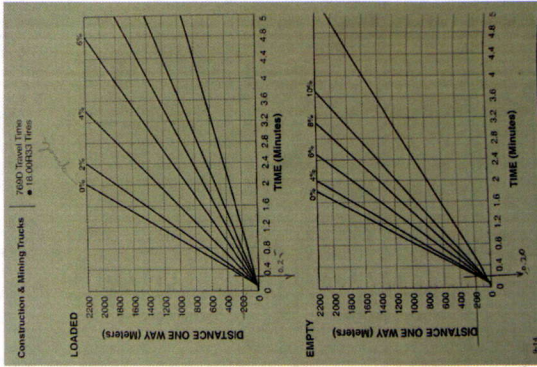
Loading Time/Truck = 0.33 minutes x 12 Loader passes per truck = 3.83 minutes

Truck Cycle Time = 0.4 minutes + 0.4 minutes + 2 minutes = 6.63 minutes

Production Rate = 25.1 LCY x 1 no. trucks = 25.1 LCY / minute

Hourly Production = 3.78 LCY / minute x 60 min/hr. x 0.75 efficiency factor = 170 LCY / hour

Hours Required = 16,111 LCY / 170 LCY/hr = 95 hours



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980 Loader time estimate for spreading sub-topsoil overburden

Spreading 16,111 CY of material after being dropped by dump-truck

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00 from Worksheet 8, page A-10, Handbook for Calculation of Reclamation Costs, Productivity for Loader Use.

Caterpillar 980G Loader

Cycle Time = min + min + min = min
 haul time loaded
 pg 12-105, Cat handbook
 see graph at right
 return time empty
 pg 12-125 Cat handbook
 see page 12-106 Cat handbook for a 7.5 CY bucket 750 CY/hr
 100 cycles/hr. + additional estimated
 time to spread material.

Net Bucket Capacity = LCY x = LCY
 heaped bucket capacity
 page 12-52, Cat
 Handbook. Rated bucket
 cap 7.5, struck 6.44
 100 - 120% for rock
 dirt mixtures
 bucket fill factor
 see page 12-79,
 Cat handbook.

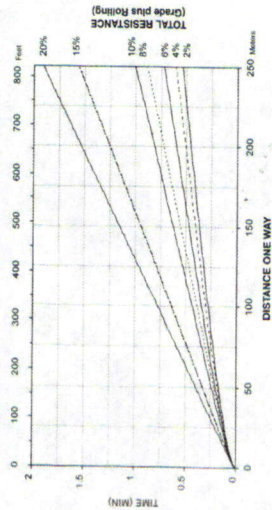
Hourly Production = LCY
 net bucket capacity
 x x min/hr = LCY/hr
 efficiency factor
 see page 18, Surface mining handbook

Hours Required = volume to be moved
 = hrs.
 LCY/hr
 hourly production

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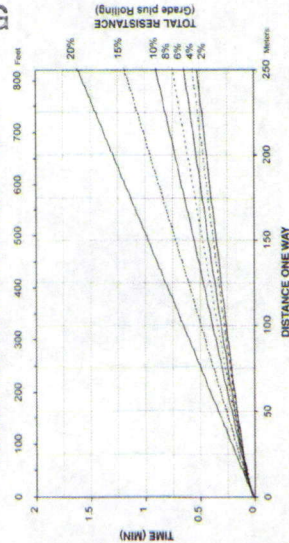
Travel Time — Loaded
 • 980G/980G Series II
 • 29.5R25 Tires

980G/980G SERIES II TRAVEL TIME — LOADED



Wheel Loaders
 Integrated Toolcarriers
 Travel Time — Empty
 • 980G/980G Series II
 • 29.5R25 Tires

980G/980G SERIES II TRAVEL TIME — EMPTY



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Snow White N.O.I. For L.M.O. Appendix 4, page 8

345 track hoe time estimate for loading temp topsoil pile into dump truck

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

from Worksheet 10, page A-12, Handbook for Calculation of Reclamation Costs, Productivity for Hydraulic Excavator Use (Backhoe or Power Shovel).

Caterpillar 345 Track Hoe

volume of material to move: (.8 acre (item 1 on map) x 45,500 ft²/acre x 10ft) / 27 ft³/CY = 16,111 CY CY

Net Bucket Capacity = LCY x = LCY
heaped bucket capacity
pg. 4-16, Cat handbook
used avg of 1.91 to 2.87 yd³ bucket fill factor
see page 4-132 Cat handbook
for hard, tough clay.

Hourly Production = $\frac{\text{net bucket capacity} \times 60 \text{ min/hour}}{\text{cycle time. See page 4-179, Cat handbook.}}$ x $\frac{\text{efficiency factor}}{\text{page 18, Surface mining handbook}}$ = 295 LCY/hr
 minutes x 60 min/hour
 cycle time.
See page 4-179, Cat handbook.
 efficiency factor
page 18, Surface mining handbook

Hours Required = $\frac{\text{volume to be handled}}{\text{net hourly production}}$ = 6.4 hrs
 volume to be handled
 LCY/hr net hourly production

Dump Truck Time Estimate

For hauling top soil to temp. stock pile. 1,880 CY, avg. dist 400 ft.

from Worksheet 9, page A-11, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Truck Use.
this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

Caterpillar 769C Dump Truck

No. Loader Passes / Truck = 25.1 Loose Cubic Yards, LCY = 28.6 yd³ heaped, 25.1 avg.
from pg. 10-3, Cat Handbook 11, 740 Truck, 21.6 yd³ struck,

Truck Capacity 25.1 Loose Cubic Yards, LCY = 12 passes (rounded to nearest whole number)

Loader bucket capacity (see 2.16 LCY)

Net Truck Capacity = 2.16 LCY x 12 Loader passes per truck = 25.1 LCY

Loading Time/Truck = 0.33 minutes x 12 Loader passes per truck = 3.83 minutes

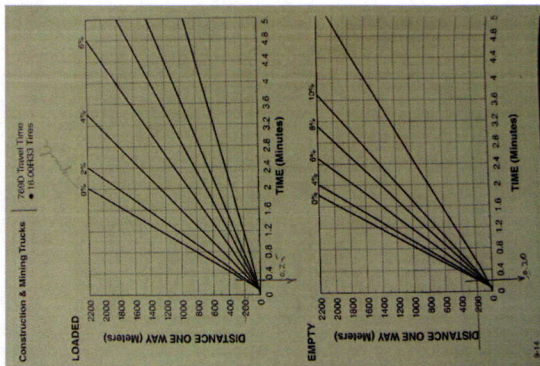
Truck Cycle Time = 0.8 minutes + 0.8 minutes + 2 minutes = 7.43 minutes
Haul time see pg. 9-14 Cat handbook, distance vs. time vs. grade graph for this truck
loading time dump and maneuver time from Cat Handbook pg. 9-9

Production Rate = 25.1 LCY x 1 no. trucks = 3.38 LCY / minute

Truck Cycle time 7.43 minutes

Hourly Production = 3.38 LCY / minute x 60 min/hr. x 0.75 efficiency factor = 152 LCY / hour
page 18, Surface mining handbook

Hours Required = 1,880 LCY / 152 LCY/hr = 12 hours
Volume of material to be moved
Hourly Production



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980 Loader time estimate for spreading topsoil overburden

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00 from Worksheet 8, page A-10, Handbook for Calculation of Reclamation Costs, Productivity for Loader Use.

Caterpillar 980G Loader

Cycle Time = $\frac{\text{haul time loaded}}{\text{pg 12-105, Cat handbook see graph at right}}$ $\frac{0.25}{\text{min}}$ + $\frac{\text{return time empty}}{\text{pg 12-125 Cat handbook see page 12-106 Cat handbook for a 7.5 CY bucket 750 CY/hr see graph at right}}$ $\frac{0.2}{\text{min}}$ + $\frac{0.7}{\text{min}}$ = 100 cycles/hr. + additional estimated time to spread material.

Net Bucket Capacity = $\frac{\text{heaped bucket capacity}}{\text{pg 12-52, Cat Handbook. Rated bucket cap 7.5, struck 6.44}}$ $\frac{7.5}{\text{LCY}}$ x $\frac{\text{bucket fill factor}}{\text{see page 12-79, Cat handbook. 100 - 120% for rock dirt mixtures}}$ $\frac{1}{\text{LCY}}$ = 7.5 LCY

Hourly Production = $\frac{\text{net bucket capacity}}{\text{cycle time}}$ $\frac{7.5}{\text{LCY/hr}}$ x $\frac{\text{efficiency factor}}{\text{see page 18, Surface mining handbook}}$ $\frac{0.5}{\text{LCY/hr}}$ x 60 min/hr = 346 LCY/hr

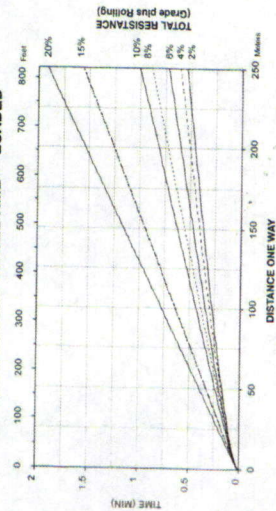
Hours Required = $\frac{\text{volume to be moved}}{\text{hourly production}}$ $\frac{1,880}{\text{LCY/hr}}$ = 5.4 hrs.

Snow White N.O.I. For L.M.O. Appendix 4, page 10

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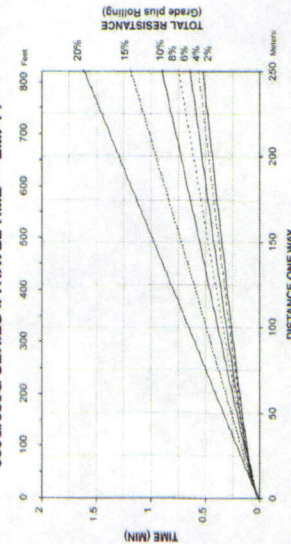
Travel Time — Loaded
• 980G/980G Series II
• 29.5R25 Tires

980G/980G SERIES II TRAVEL TIME — LOADED



Wheel Loaders
Integrated Toolcarriers
Travel Time — Empty
• 980G/980G Series II
• 29.5R25 Tires

980G/980G SERIES II TRAVEL TIME — EMPTY



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Snow White N.O.I. For L.M.O. Appendix 4, page 11

hourly machine costs:

Cat 345 track hoe

\$191

Cat D8 Dozer

\$98

Cat 890 Loader

\$93

Cat D769C Dump Truck

\$125

For detail
reference
page below

	Task	Time (hrs)	Cost per hour	no of units	Cost
3	Track Hoe Estimate for removing top soil overburden and placing in temporary overburden pile.	6.4	191	1	\$1,222
4	Dump truck time for making temporary top soil overburden pile	11.0	125	1	\$1,375
5	Track Hoe time for removing and redistributing sub-topsoil overburden.	54.0	191	1	\$10,314
6	Dump truck time for removing and redistributing sub-topsoil overburden	95.0	125	1	\$11,875
7	Loader time for spreading sub-top soil overburden.	32.0	93	1	\$2,976
8	Track hoe time for loading dump truck with temp. topsoil overburden from temp. top soil pile	6.4	191	1	\$1,222
9	Dump truck time for redistributing top soil.	12.0	125	1	\$1,500
10	loader time for spreading top soil.	5.4	93	1	\$502
	cost of seeding 1 acre.				\$200

\$31,187

Equipment mobilization. 1 dump truck, 1 track hoe, 1 loader @ \$2,000 / unit	\$6,000
Supervision of reclamation (10% of total reclamation costs)	\$3,100

\$9,100

Subtotal work, seeding, equip mobilization costs, and supervision.

\$40,287

5 year Escalation

1	\$40,287	1.20%	\$483
2	\$40,770	1.20%	\$489
3	\$41,260	1.20%	\$495
4	\$41,755	1.20%	\$501
5	\$42,256	1.20%	\$507

\$2,476

Total cost estimate

\$42,763